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NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

Presidential Address*

By

WILLIAM McGREGOR MITCHELL, *M.C., T.D.*, M.B., CH.B., B.SC. (EDIN.), M.R.C.V.S.

PRINCIPAL AND PROFESSOR OF SURGERY AND OBSTETRICS, ROYAL (DICK) VETERINARY COLLEGE, EDINBURGH

Having spent a lifetime in veterinary education, it may be of some interest if, for the short time I am privileged to address you, I direct your attention to some of the developments which are exercising the minds of many of us who are closely associated with the source of the future members of our profession, and this Association in particular. Even education is apt to be drawn into the turmoil of heated political argument, but, like so many other threatening crises which beset us in this world of change, the clash of opinions which for a time appears to be about to split us into irreconcilable camps disappears when it is appreciated that no vital principle is at stake. Such a crisis appeared to be threatening the unity of the profession two or three years ago following the recommendations of the Second Loveday Report, to incorporate Veterinary Education within the University system of the country. The Association, through its Council and Divisions, did much to awaken interest among its members in the fundamental changes likely to follow the adoption of the recommendations of that Report and made it easier for the Council of the Royal College of Veterinary Surgeons, accustomed to work in an atmosphere of greater seclusion than we do, to sense the opinion of the profession and thus to be guided in its negotiations with the Government, preparing a Bill to give effect to the proposed changes. The heat of controversy appears to be quite forgotten to-day and in its place there is now rather a feeling of impatience at the slow progress of events, nay, almost a fear, that our veterinary colleges may fail to become part of their respective universities, as was so strongly advocated by the Loveday Committee.

If the delay is due to some contested point liable to jeopardize the proposed Bill, then in the interests of the profession such should be deleted so that the advantages in the education of our successors can be obtained as soon as possible.

One of the great advantages of which the incorporation of our schools within universities gave promise was the emancipation they would have from a system of external examinations, which by their pressure have a cramping effect on instruction and guidance. Good students are not always those who can remember what they have heard or read and are able to produce it at an examination. To aim merely at reaching a standard of instruction certain of producing passes in an examination appeals to some, but is not in keeping with the true spirit of education which should be to stimulate students to exercise their minds and look for proof of assertions made by their teachers.

If students have developed a critical sense and this is founded on sound general principles, we do not need to stop and enquire too closely into how much they can remember of what has been heard or read. Let us be sure they are able to use their knowledge when they qualify, capable of weighing facts observed and discussing the interpretations proposed, so as to arrive at truth which will bear scientific criticism.

The fields of knowledge in veterinary science are ever expanding, so that no single person has the capacity to teach multiple subjects as was the practice in most colleges not so long ago. This has led to the inevitable development of specialism—a necessity, but nevertheless an evil, as far as the unfortunate undergraduate is concerned. Unless teachers of special subjects retain an interest in the general flow of knowledge and the general aim of the whole course, stressing general principles rather than details, the minds of students may be so burdened with unrelated knowledge that, though they may pass their qualifying examination, when they come up against the problems of practice they feel in their confusion: "Alone, alone, all, all alone; Alone on a wide, wide sea."

To add to the complexity of training of the present student, the prospects which lie ahead after qualification are many compared with those which presented themselves at the turn of the century and, for this reason, it is necessary to-day to cover a wider field of studies in a student's basic training in order to prepare him to decide his future sphere of interest on qualification. At that time, the horse was still the chief source of livelihood of the majority of veterinary surgeons but the development of the internal combustion engine has altered all this and yet in spite of this change, there was never such a demand in the world for trained veterinarians as there is to-day. The economic importance of the herds and flocks of this country has come to be recognized as never before, thanks to the part played by British agriculture in feeding the teeming millions in these beleaguered islands during the war, and particularly in maintaining our milk supply. The task awaiting the profession to diminish the losses from preventible diseases occurring in our dairy herds is immense and the concentrated effort, long overdue, against tuberculosis alone, will require a considerable increase in numbers of both whole-time Veterinary Staff of the Animal Health Division of the Ministry of Agriculture and general practitioners, if appreciable headway is to be made. The emphasis which has been placed upon the maintenance of animal health has an appeal as an ideal towards which to strive, but we must never forget that the forces of nature all lead to the grave. There will always be a necessity for trained men with a sound scientific understanding of the principles and art of Veterinary Medicine and Surgery, who possess the skill to recognize the evident signs of ill-health and who are able to alleviate suffering, and delay the downward trend.

During the period between the two world wars we saw the rapid development of veterinary practice among domestic pets, largely neglected up to this time except in a few towns; as equine practice diminished in the large centres of population many veterinary surgeons would have found it difficult to make ends meet if they had not built up small-animal practices and even in the country districts the dog and cat provided an appreciable income in the dark days of agricultural depression.

On the outbreak of the last war and until after the gravest dangers of invasion were past, small-animal practice shrank, but since then it has more than recovered lost ground in most parts of the country and great strain has been felt by overworked small-animal practitioners because of the difficulty of obtaining assistants, the prosperous state of large-animal practices absorbing graduates who were granted deferment so long as they served animals of economic value. This state of affairs, as far as small-animal practice is concerned, is likely to continue for a number of years yet, because of a recent Government instruction that students who have been granted deferment from National Service are not free on qualification to take employment in practices solely serving dogs and cats. With this restriction of employment of new graduates, the field of small-animal practice is liable to become more vulnerable to the abuses of unqualified persons working independently or in the employ of organizations controlled by individuals able to collect funds in the name of charity, by propaganda intended to appeal to the sympathy of the animal-loving public who are unable to appreciate what training is necessary to produce a professional man or woman capable of investigating, differentiating, and treating scientifically the multitudinous injuries and diseases to which their pets are liable. Our duty as a profession to the animal-owning public is to prevent and cure illness among their animals, whether large or small, and for these ends the training of the veterinary surgeons of the future must accordingly be comprehensive.

In determining the general training of students, we must not allow the present demand for practitioners in purely agricultural districts to blind us to the crying needs of small animals in cities and crowded districts, and the study of their diseases must continue to receive equal attention with those of farm animals. In any case, general principles of Veterinary Medicine and Surgery are just as applicable in the academic field of those subjects in

*Delivered on the occasion of the Sixty-fifth Annual General Meeting held in the College Hall of the Royal (Dick) Veterinary College, Edinburgh, on Wednesday, July 30th, 1947.

every type of animal, though the art and techniques of practice do differ somewhat in the various species of animal. From a purely teaching point of view, it is easier to collect in hospital a greater wealth of clinical material from small-animal practice than from large-animal practice, and the very ease of supply in the years before the war did perhaps blind clinical teachers, in a country which neglected its agriculture, to the need to develop instruction in clinical medicine and surgery of farm animals other than the horse.

The location of colleges in cities fostered this development, but thanks to the enlightened outlook in Government circles since 1938, stimulated by the reports of the Loveday Committee and the activities of the National Veterinary Medical Association, colleges now find themselves able to make plans to round off the training of students by acquiring field stations with facilities for hospitalization of farm animals free from the burden of finding funds from private sources to finance them.

I would like our foreign delegates visiting us for the first time to understand when they look at our colleges that what they see in the way of buildings may seem cramped and crowded to them compared with the magnificent institutes which go to form their great schools, but in this country the veterinary schools are largely the result of private munificence. In 1920, five years after this building in which we are met to-day was erected, the annual grant from Government sources was only £200 and as recently as 1938 it had only reached £4,800.

Liverpool has been more fortunate than other centres of veterinary education in having been able to establish a Field Station and the experience of its working, freely and most generously placed at the disposal of representatives of other colleges by Professor Wright, will be of inestimable value in formulating their plans to fit their own field stations, the sites of which are now mostly determined, into a balanced course for students which will strengthen clinical training where previously it has been weak.

The fission which we are about to see in our schools, part in the country and part in the city, has the advantage that the part in the country will bring students into closer contact with farm animals in health and disease, but it must be kept in mind that it is not the intention to turn out agriculturists but veterinary surgeons better equipped than heretofore.

The diseases and injuries of farm stock occur in the environment of rural areas and a veterinary surgeon who is ignorant of crops and cropping and the daily life of the farmer cannot hope to be a really successful practitioner. Knowledge of these things for the veterinary student who already has an overloaded curriculum of studies should come by what has aptly been called background education, moving about in contact with reality and working and living along with fellow students studying the practice and science of agriculture in all its many branches. Such a solution of this desired conception of balanced education for veterinary students has recently been made possible by the acquisition of the Bush & Dryden Estates within five miles of the centre of Edinburgh, by the University of Edinburgh, where, under her guiding influence, an experiment pregnant with great possibilities for the good of agriculture as a whole, is about to come into being and of which I trust she will ever be proud. Here, facilities in the form of land and farm buildings will be made available for the large number of scientific bodies interested in agricultural education and research, and thus link them together as a community to their mutual advantage. The estate of 1,400 acres of land, extending from the crest of the Pentland Hills to Roslin Village, provides variety of country for all types of arable farming and stock raising and a small Board of Management, with the Principal of Edinburgh University as its first Chairman, has been formed to control the property, on which the Board of Management of this College will be represented. The bodies which will be incorporated at the commencement of this School or Centre of Rural Economy are:—

The East of Scotland College of Agriculture,
Agricultural Research Council Genetics Field Station,
Plant Breeding Station,
Forestry Department (University),
Royal (Dick) Veterinary College Field Station,
Agricultural Machinery Experimental Station,
Mycology Field Laboratory (University), and the
Horticultural Station.

The mansionhouse on the estate will, until such time as building operations can be undertaken, serve as a common hostel for students of all sectional interests.

Provisionally, 240 acres of this estate will form the Field Station for the Royal (Dick) Veterinary College in proximity to the Plant Breeding Station and Horticultural Station, which will permit of transference of land according to rotational needs. Cultivation of the land will be the responsibility of the School of Agriculture to meet the needs of the stock kept on the Field Station for Veterinary Educational purposes, as it would be a needless dissipation of veterinary students' time to employ them in purely agricultural work. It is proposed to organize the Field Station in three sub-sections: (1) Field Hospital with Clinical Pathology and *post-mortem* room block, and hostel for a section of the Final Year students; (2) a Teaching Farm with the necessary lecture rooms, laboratories and farm buildings for the teaching of Animal Husbandry; (3) an Experimental Farm.

In the fourth year of the course, veterinary students will be housed in the common hostel of the estate, along with University students working on the various sectors of the whole estate, and their main study will be Animal Husbandry, Veterinary Hygiene and Preventive Medicine at the teaching farm, but in order to balance studies in this year, part of each day will be spent at the Field Hospital Section for a daily lecture in Medicine, Surgery, or Obstetrics, followed by clinical work and clinical pathology.

The Final Year will be a year free from systematic lectures in Medicine and Surgery, as it is intended to start these in the third year in the City and complete them in the fourth year at the Field Station. The class will be sub-divided so that one term will be spent wholly at the Field Hospital and one term at the small animal clinic in the City.

The experimental farm is essentially for research work and will be organized to meet the needs of all College Departments requiring accommodation for field experiments, and probably University Departments' needs as far as animals are concerned will also be catered for here.

This section of the Field Station will merely serve as an adjunct to the Teaching Farm and Field Hospital, and will provide demonstrations to illustrate academic work of Departments. It will be seen that during the five years of veterinary study a student will spend four terms living and working on the field station, but the near proximity of the Station to the city will permit of special classes from the city meeting there when required, and in vacations, students of the pre-clinical years will in groups occupy the hostel accommodation of fourth-year students for practical instruction in Animal Management.

The closer linking of the training of Veterinary and Agricultural students will be for the mutual benefit of both, but do not let us forget that the training of a veterinary student requires a period of five years and that our profession is much more akin to Medicine than to Agriculture—even the time spent at a Field Station is largely the study of animals in health and disease in rural settings—so when incorporation of our colleges within universities takes place, the link with the sister profession of Medicine will no doubt become closer and we trust will play an important but never dominating part in the future development of veterinary art and science.

I have not mentioned the greatest problem of all—that of finding staff which, in these commercialized and unsettled times is becoming ever more and more difficult. I will not go into details but the problem is a very urgent one and not easy of solution. Without an adequate, skilled, and well-trained staff, sympathetic to students, all our planning will be in vain. Good teachers, like poets, are born and not made, and for them it should be essentially a vocation, but it is our duty as an Association to encourage prospective candidates in every way.

Concern over infiltration of disease-carrying cattle into T.T. herds of Mid-Wales was expressed at a meeting of Montgomeryshire F.U. at Newtown. Several members spoke of the difficulty in keeping herds free from tuberculosis when cattle from over the border, bought under guarantee, reacted immediately. Mr. Clement Davies, M.P., pointed out that legally a full claim of reimbursement could be made against the dealers who sold such cattle.—*Farmer and Stock-Breeder.*

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Saskatchewan students who enter the Ontario Veterinary College are being offered a total of $5,100 in scholarship awards by the Veterinary Division of the Provincial Department of Agriculture. When outlining revisions in the original 1946 scholarship plan, the Hon. I. C. Nollett, Saskatchewan's Minister of Agriculture, stated that the plan aims at "assisting student veterinarians to further their studies, and upon graduation to return to Saskatchewan to practice their profession."

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N.V.M.A. Annual Congress

A. Annual Congress, Edinburgh, 1947

[*E. R. Yerbury & Son, 90 and 92, Morningside Road, Edinburgh, 10.*

Congress Attendance List

We give below the list of delegates, members and visitors who attended the Annual Congress of the Association held in Edinburgh.

Every effort has been made to render the list complete, but it is evident that many of those who participated omitted to sign the attendance book from which this record is compiled.

MEMBERS

(Exclusive of Delegates)

Professor W. M. Mitchell (President, N.V.M.A.), Messrs. S. G. Abbott, F. H. Addison, G. S. Allen, T. H. Allen, K. P. Anderson, L. G. Anderson (President-Elect), Dr. F. Alexander, Messrs. A. H. Andrew, J. Andrew, G. W. Argo, G. Atkinson, H. Bain, Capt. J. R. Barker, Messrs. W. F. Barton, J. Barr, G. S. Beattie, I. S. Beattie, G. L. Beaumont, H. Begg, Senr., A. J. Beeson, R. S. Beynon, Miss H. Bissett, Messrs. P. S. Blackburn, P. H. Blampied, Dr. W. P. Blount, Professor G. F. Boddie, Mr. J. Boyle, Miss W. M. Brancker, Messrs. A. D. J. Brennan, P. S. Bridge, J. B. Brooksby, J. G. Brotherston, A. C. L. Brown, J. A. Brown, W. Brown, W. M. Brownlie, J. W. Bruford, D. K. Bryson, J. C. Buxton, H. E. Bywater (Hon. Treasurer), E. R. Callender, J. T. Cairns, D. Campbell, Miss D. C. Campbell, Messrs. D. S. Campbell, J. Campbell, J. G. Campbell, M. A. Carmichael, A. S. Chapman, T. A. M. Chambers, W. Ross Cockrill, J. P. Cook, E. R. Corrigall, G. D. Coward, M. Crawford, D. R. V. Crichton, H. Cronly, J. A. Dall, Dr. G. O. Davies, Messrs. D. W. Donaldson, L. Dougal, G. P. Dougill, R. A. Douglas, W. A. Doughty, H. F. Downie, R. H. Duff, P. D. Dunn, G. Durrant, Mrs. R. Eden, Mr. F. B. Edwards, Professor J. W. Emslie, Messrs. K. H. Everett, R. H. Ewart, V. D. C. Farrant, C. M. Ferguson, T. B. Fleming, A. Foggie, M. P. Ford, R. Ford, W. Forgrave, K. A. Forker, Principal A. A. Forsyth, Messrs. A. D. Forteath, A. V. B. Foster, H. Fulton, R. M. Gambles, C. R. Garfitt, J. S. Garside, Miss D. A. Gaston, Messrs. G. M. Gibson, H. Gillmor, H. D. Gilmore, Dr. A. Ginsberg, Messrs. R. E. Glover, G. N. Gould (Vice-President), J. C. Grant, W. Grant, Dr. J. R. Greig, Mr. W. A. Greig, Dr. O. V. Gunning, Messrs. H. E. Harbour, J. D. Harper, W. Harris, G. B. S. Heath, A. Hector, G. S. B. Henderson, Dr. W. M. Henderson, Messrs. H. Holroyd, D. M. Hood, W. H. Horne, J. H. M. Hughes, W. K. Hunter, J. S. S. Inglis, J. McConnachie Ingram, S. Jamieson, S. Jennings, F. V. John, J. Johnston, R. W. Johnston, W. J. Jordan, Mrs. K. G. R. Kelly, Messrs. A. J. Kennedy, H. N. Kennedy, J. E. Kenny, J. Keppie, D. Laird, Dr. J. A. Laing, Mr. N. H. Lambert, Dr. H. G. Lamont, Messrs. J. Lawson, D. E. Leask, R. M. Lee, R. L. le Roux, P. T. Lindsay, J. L. Linzell, E. W. Little, H. K. Littlewood, H. B. Luxmoore, J. Lyon, D. I. MacAllister, J. D. Macaulay, P. J. McCann, M. McClelland, D. I. MacRae, D. R. Macrae, W. D. Macrae, M. R. McCrea, B. A. McErlean, Dr. A. D. McEwen, Professor P. A. McGeady, Major J. G. McGregor, Messrs. W. M. McKay, J. Mackenzie, W. R. McKinna, A. S. Mackintosh, J. J. McLaren, A. McLean, T. McNabb, C. McNulty, D. F. Macpherson, J. McQuaker, D. Magowan, H. A. G. Meikle, D. R. Melrose, R. W. M. Mettam, J. Milne, J. A. Milton, J. M. Mitchell, T. M. Mitchell, R. K. Moodie, R. Moore, P. D. G. Morris, J. M. Morrison, S. J. Motton, M. M. Murchison, J. A. Naismith, C. Nicholson, J. Norval, D. D. Ogilvie, D. F. Oliver, G. M. G. Oliver, A. D. Osborne, E. A. Pearce, W. W. Peggie, J. D. Pemsel, A. C. Penman, D. R. Perrett, A. E. Pierce, A. Pottie, J. O. Powley, J. W. Procter, J. B. Pullon, W. B. Quarmby, Major D. S. Rabagliati, Messrs. I. D. Rankin, G. G. Rennie, Vety.-Col. Graham Rees-Mogg, Messrs. D. Reeves, A. Reid, S. R. Rippon, C. Roberts, Professor A. Robertson (Local Secretary), Messrs. W. G. Robinson, J. M. Rorrison, G. A. Sangster, R. Scoular, W. B. Shaw, S. Sharp, J. W. Simpson, H. H. Skinner, J. Smith, R. M. Smith, Brigadier J. J. M. Soutar, Messrs. J. G. Souter, A. Spreull, J. T. Stamp, A. H. Stark, D. B. Steel, H. W. Steele-Bodger, D. L. Stewart, Q. A. Stewart, D. O. Sutton, E. G. Sutton, R. Swaby, H. C. Swann, Dr. E. L. Taylor, Messrs. J. F. Taylor. A. Thomson (Beckenham), A. Thomson .Glasgow), Mrs. E. I. Thomson, Messrs. J. C. L. Thorne, C. Tracy, A. C. Urquhart, Miss O. Uvarov, Messrs. J. C. Wallace, A. H. Watson, J. F. Watson, Dr. P. S Watts, Messrs. C. Weighton, W. R. Weipers, Colin Welsh, Thos. Wilkinson, R. A. Willett, J. E. Wilson, W. R. Wilson, Miss C. A. Woods, Messrs. E. G. Wood, S. W. Wood, Dr. W. R. Wooldridge, Messrs. W. H. Wortley, A. J. Wright, Professor J. G. Wright, Messrs. T. L. Wright (Hon. Secretary), G. Wyse and A. Young.

DELEGATES

Overseas Delegates

Monsieur A. Bouchet, Société Vétérinaire Pratique de France.

Professor Anton Brandt, Veterinary School, Oslo, Norway.

Professor Bressou, Principal, L'Ecole Vétérinaire d'Alfort, Paris; also representing L'Académie Vétérinaire de France.

Professor Karl Eriksson, Veterinary School, Stockholm.

Professor Liegeois, Union Vétérinaire, Belge.

Professor G. M. Van der Plank, Veterinary School, Utrecht, Holland.

Dr. N. Plum, President of the Danish Veterinary Association.

Representative of Dominion Government

New Zealand: Colonel H. A. Reid, F.R.C.V.S.

Representing Government Departments

Department of Agriculture, Dublin: Professor A. F. O'Dea, M.R.C.V.S.; Professor T. G. Browne, M.R.C.V.S.; Mr. P. W. D. O'Connell, M.R.C.V.S.

Department of Health, Dublin: Mr. P. Harnett, M.R.C.V.S.

Ministry of Agriculture, Northern Ireland: Mr. J. McAllan, M.R.C.V.S.; Mr. J. I. Magowan, M.R.C.V.S.

Department of Agriculture, Scotland: Mr. J. N. Ritchie, M.R.C.V.S.

Representatives of Local Authorities

Belfast Corporation: Capt. A. McLean, B.SC., M.R.C.V.S., D.V.P.

Birmingham Corporation: Mr. C. G. Allen, M.R.C.V.S.

Cardiff Corporation: Alderman J. Griffiths, J.P.; Councillor G. Llewellyn Ferrier; Mr. W. H. M. Hughes, M.R.C.V.S.

Cork Corporation: Mr. S. R. J. Cussen, M.R.C.V.S.

Edinburgh Corporation: Mr. J. Norval, M.R.C.V.S.

Glasgow Corporation: Bailie William Monteith; Councillor John Scott; Mr. J. A. Rennie; Mr. S. G. Abbott, M.R.C.V.S.

Metropolitan Cattle Market (London): Mr. E. F. McCleery, M.R.C.V.S.

West Ham Borough Council: Mr. H. E. Bywater, M.R.C.V.S.

Manchester Corporation: Councillor J. E. Burgess; Councillor C. Bentley; Councillor A. Donovan; Mr. L. Kirkham; Mr. D. E. Orr, M.R.C.V.S.

City and County of Newcastle-on-Tyne: Mr. H. Thornton, M.R.C.V.S.

Preston Borough Council: Mr. F. J. Proctor, B.V.SC., M.R.C.V.S., D.V.S.M.

Dublin Corporation: Mr. P. F. Dolan, M.R.C.V.S., D.V.S.M.

VISITORS

Mr. C. Aharoud (Palestine), Mrs. A. H. Andrew, Mrs. J. Andrew, Mrs. J. R. Barker, Mrs. G. S. Beattie, Mrs. G. L. Beaumont, Dr. Boniell, Mr. J. Boyle, Miss Jeanne Bradbury, Mr. J. E. Burgess, Mrs. M. M. Dall, Mr. H. F. Downie, Dr. Dubois, Dr. H. Dryerre, Mr. B. L. Everett, Mrs. M. Gambles, Mrs. R. E. Glover, Mrs. W. Grant, Miss Mary Grant, Dr. H. H. Green, Mrs. B. Henderson, Messrs. C. D. Johnston, James Jones, Mrs. Leask, Messrs. D. J. McCaulay, W. M. McHardy, Mrs. McKinna, Mrs. Motton, Messrs. K. Narwekar, W. G. R. Oates (Secretary and Registrar, R.C.V.S.), Mrs. O'Dea, Dr. J. N. Oldham, Mrs. M. Oliver, Messrs. A. C. Penman, A. M. Penman, H. W. Pfaff, Mrs. E. S. Powley, Mrs. M. A. Powley, Mrs. F. J. Proctor, Messrs. J. A. Rennie, A. Rafyi, Mrs. A. J. Roberts, Mrs. A. Robertson, Dr. Robinet, Messrs. C. R. Sana, H. B. Sangster, Councillor J. Scott, Mrs. J. Smith, Mr. C. B. Somerville, Mrs. Q. A. Stewart, Mr. E. A. Swaby, Dr. L. Tobback, Dr. L. Touretier, Mrs. M. Wilkinson, Mrs. W. R. Wooldridge, Messrs. V. C. Woods, C. F. Wortley and Mrs. A. J. Wright.

Attenders whose signatures were undecipherable and unknown 7

Total attendance recorded **360**

[*Attendance at* 1939 (*last full provincial*) *Congress* ... 275]

Dr. Stephen Taylor, M.P. for Barnet, speaking at West Fulham, said that when the Health Act came into force next July an iron curtain would be drawn around places where there were too many doctors, preventing new doctors from opening a practice. "Over-doctored" places like Hastings, Bournemouth, Bath and Brighton would be affected. Doctors would be attracted into the industrial and rural areas where they were scarce by the offer of extra money.

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Capacitron is the name given a new electronic device by which electrons can be released for a period of a millionth of a second. According to the inventors it may be used for sterilizing all manner of substances—hypodermic and intravenous solutions, whole blood, plasma, milk and other food without affecting the potency, taste or other characteristics. A longer exposure to the shower of electrons—15 millionths of a second—will preserve foods by inhibiting enzyme as well as bacterial action. An "irradiated" beefsteak was unchanged after twelve days in an incubator at 98° F.—*Vet. Med.*

XUM

NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

ANNUAL CONGRESS, 1947

The 1947 Annual Congress of the National Veterinary Medical Association of Great Britain and Ireland was held at the Royal (Dick) Veterinary College, Edinburgh, from July 27th to August 1st, 1947, under the Presidency of Professor W. M. MITCHELL, M.C., T.D., M.B., CH.B., B.SC., M.R.C.V.S.

The first Function of the Congress was a Reception arranged by the Scottish Metropolitan Division, given in the Royal (Dick) Veterinary College on Sunday, July 27th.

Opening Meeting

The formal opening of the Congress took place on Monday, July 28th, by the Lord Provost of Edinburgh's Deputy, Bailie Bruce Turnbull.

The President was supported by: Mr. G. N. Gould, Immediate Past-President; Mr. L. Guy Anderson, President-Elect; Mr. H. C. Bywater, Hon. Treasurer; Captain T. L. Wright, Hon. Secretary, and Mr. J. N. Ritchie, Chairman of the Provisional Committee.

THE PRESIDENT, in inviting Bailie Bruce Turnbull to open the Congress, said that the association between the City of Edinburgh and the veterinary profession was very old and peculiarly intimate, because, for many years, the city had held the trusteeship of the College, and the College felt that for one of the City Fathers to visit it was not only a privilege, but a duty. Dick, who founded the College, nominated the Council of the City of Edinburgh its Trustee, and for many years, from his death until the incorporation of the College in 1906, they carried out that duty. He could remember quite well the Lord Provost coming down, more or less in state, to look round the College and see that the teachers and professors were doing their duty. Dick, the Father of the profession in Scotland, was the instigator of the group of veterinary societies in Scotland, because nearly all the graduates in practice in the country had been students of his College when they were formed, although it was not until much later that the Association came into being.

They were to-day remembering the past because of the associations of the profession with the city, but he would remind the audience that the aims of the Association for the future were neither exaggerated nor extravagant. It was out for progress and the welfare of its divisions which constituted the Association. It looked forward always to advancement and improvement by means—always legitimate—of open and free criticism to carry on its work.

BAILIE TURNBULL expressed the regrets of the Lord Provost for his inability to be present, but he had asked him as Senior Magistrate to deputise for him, and he did so with the very greatest pleasure. He extended, on behalf of the Lord Provost, Magistrates and Council, the most hearty welcome to the ancient City of Edinburgh, the capital of Scotland. He particularly wished to extend to all the delegates from foreign countries a specially warm welcome, not only to Edinburgh, but to Scotland. Edinburgh seemed to be more and more popular as a conference centre, and he need hardly say how gratified Edinburgh was that the National Association should have selected their city for their Conference this year. He had seen the agenda and while many learned discussions were to take place on all manner of subjects affecting veterinary and allied sciences, he was glad to know that the members were to have some relief in the shape of excursions outside, and also the opportunity of seeing something of the city. He was sure that all would find something of interest.

In these modern days of motor transport, the veterinary surgeon was of the utmost importance in the development of the life of the community. We had become almost independent of our dumb friends in the matter of transport, but we were becoming more and more dependent upon animal life for our day-to-day existence and the people of the country were deeply grateful to the members of this very honoured profession for their skill and devotion to duty in these very difficult times.

Edinburgh was very proud of the Royal (Dick) Veterinary College. (Hear, hear.) He was interested to hear the President say how close was the association between City and College. The College had progressed under the leadership of Professor Mitchell and his distinguished predecessors, and he wished for them the greatest possible success in the future. (Applause.)

One of the most valuable things about meetings of this sort were the unofficial contacts outside the classroom, where one could meet old friends and renew old friendships and probably make new friends. He hoped the Conference would be most enjoyable and instructive and that veterinary surgeons would find a happy solution to all their troubles.

It only remained for him to say, "Best of luck to this Congress and I hope you will enjoy your stay in Edinburgh." (Applause.)

Mr. G. N. GOULD proposed a very sincere vote of thanks to Bailie Turnbull for the able and kindly way in which he had opened the Congress. All who arrived the previous night were greatly impressed by the hospitality of the Scot at the wonderful reception given by the Scottish Metropolitan Society. (Applause.) From what one had read in the Guide Book of all there was to see in Edinburgh, to learn and to live up to, the members could be assured of a very interesting and instructive week in this very ancient city.

The vote of thanks was accorded by applause.

Papers Presented to Congress

The College Hall, large as it is, was crowded rather more than to capacity at each of the sessions devoted to the consideration of scientific papers. This testimony to the interest aroused by their subjects—and be it said, to the wisdom of circulating them to members in advance—was supplemented by well-sustained discussions, to which the general body of members was able to make a representative contribution in view of the decision to devote the whole of a morning or afternoon to the consideration of one paper only.

In this issue we publish (below) the first paper to be read and discussed, that by Professor Geo. F. Boddie, B.SC., M.R.C.V.S., F.R.S.E., on "Toxicological Problems in Veterinary Practice," the discussion being opened by Dr. H. H. Green and Mr. T. M. Mitchell. Next week's issue will contain the paper on "Retention of the Placenta in the Bovine," by Mr. A. J. Kennedy, B.SC., M.R.C.V.S., with report of discussion, opened by Mr. A. S. Chapman and Mr. J. M. Rorrison. In the succeeding issue will be inserted the paper by Mr. M. Crawford, M.R.C.V.S., discussion upon which was opened by Dr. W. M. Henderson (in the unavoidable absence of Dr. I. A. Galloway) and Dr. D. R. Wilson.

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No. 1—Toxicological Problems in Veterinary Practice*

By

GEORGE F. BODDIE, B.SC., M.R.C.V.S., F.R.S.E.

The Great Hall at the Royal (Dick) Veterinary College was crowded on the afternoon of Monday, July 28th, 1947, for the session devoted to consideration of Professor Boddie's paper.

The chair was taken by Mr. J. N. RITCHIE, B.SC., M.R.C.V.S., D.V.S.M., of the Ministry of Agriculture. Having introduced Professor Boddie—formally, as the essayist was on his home ground—the chairman said that the subject was of great interest to the profession and there should be a good discussion on it. The author wished to precede the discussion with a few brief comments.

Professor BODDIE: There were two particular things of a personal nature which gave him a great deal of pleasure in connection with the presentation of that paper. One was that Mr. Ritchie should be the chairman of the meeting, for Mr. Ritchie and he had worked together for so long and so often that it was singularly appropriate that they should be together on the platform that afternoon. The other personal point was that it so happened that he gave the last paper at the Great Yarmouth Congress of 1939, and now he found himself giving the first paper of the Congress of 1947. (Applause.)

There were one or two points he perhaps might make to supplement the paper. The first related to the war-like stores poisoning. They might have seen in the papers in recent weeks allegations of continued ill-health among stock—these allegations had proved, on investigation, to be unfounded. The area had been visited as recently as the previous Friday by Mr. Ritchie and himself and their first impression that they were unfounded was confirmed. The trend of recent observations was to suggest that the toxic substance was in fact hexachlorethane. This substance had been introduced as a remedy for liver fluke in cattle; there was, however, every difference in the world between giving one medicinal dose of a substance, with a possible repeti-

* Presented to the Sixty-fifth Annual Meeting of the National Veterinary Medical Association, at Edinburgh, on July 28th, 1947.

tion after an interval, and giving an unknown dose with every mouthful of food the animal ingests.

In regard to lead poisoning, there had been a recent case in which there appeared to be three possible sources of lead, namely, lead trimmings, white lead paint on a watertrough and red lead paint on a wooden feeding trough. Careful and painstaking investigation by Dr. Paver showed the red lead paint from the feeding troughs was responsible for the deaths of three valuable Ayrshire bulls. This had important legal repercussions, for the lead trimmings had been thrown into the field by the local authorities' servants, but the lead paint had been applied to the trough by the farmer.

They could see a demonstration by Dr. Paver of the materials from this case and he would commend to them the whole of the excellent demonstration set out by him. He desired to take that opportunity of thanking Dr. Paver for all the assistance he had so willingly given him in this and other such cases.

Toxicological Problems in Veterinary Practice

By

GEO. F. BODDIE, B.SC. (EDIN.), M.R.C.V.S., F.R.S.E.

Professor of Medicine and Pharmocology, Royal (Dick) Veterinary College, Edinburgh

Introduction

In preparing this paper, it has been thought desirable to bring under review some of the more recent instances of toxicological problems that have arisen in veterinary practice in this country. It is hoped that by doing so, not only will publication of the information so derived be of value, but that in the course of discussion still further information may be brought to light.

The recognition of individual cases of poisoning is frequently attended with difficulty. In a considerable number of cases the clinical signs only permit a general classification, and this does not make it possible to decide if the cause is poisoning or bacterial disease. Suspicions may be aroused by the circumstantial evidence, but in the absence of such evidence, or a knowledge of it, the possibility of poisoning may never be appreciated.

The ideal toxicological case presents a picture of clear-cut clinical signs and characteristic lesions, the presence of the toxic substance being confirmed by analysis and its source being traced and similarity confirmed. Sometimes these ideals may be encountered, but more often the case must be built up from indirect evidence. Though the building up of a case on indirect evidence may fall short of the ideal, it is frequently possible to assemble the facts in such a manner that the conclusion arrived at is virtually unassailable. In order to demonstrate this method of indirect approach, a description will be given of a very large outbreak of poisoning in cattle and sheep that occurred in Scotland in 1945 and 1946.

The number of recorded cases of fluorine poisoning in this country is now sufficient to justify the contention that a look-out should be kept for it in industrial areas. Fluorine intoxication is a type of poisoning that may show very characteristic lesions and the diagnosis in fluorosis can be corroborated beyond refute by chemical analysis.

Though the general features of poisoning by lead and arsenic are known, there is good ground for suggesting that the clinical signs are not sufficiently distinctive to prevent their cause passing unsuspected and, in consequence, cases of poisoning with these substances may be undetected.

The coincidence that illness and death have occurred among domestic animals following the use of rat poisons is often observed. If, in any instance, the number of animals involved is substantial, the weight of evidence may be overwhelming, but where the number is small, it may be singularly difficult to rule out the possibility of a fortuitous coincidence. Though chemical tests permit the identification of some rat poisons, certain of the substances used cannot be so identified.

It is not proposed in this paper to deal extensively with plant poisoning. Records of poisoning by iris are not numerous: the case described is sufficiently well defined to justify its inclusion. An apparent increase in the number of cases of bracken poisoning in 1946 has focused attention on the unsatisfactory state of our knowledge of the subject of bracken poisoning. Though yew is probably the best known of the plant poisons affecting livestock, recent occurrences point to a lack of appreciation on the part of stockowners of the poisonous properties of yew.

Attention is directed to the toxicity of some of the drugs that are now in common use. It will be realized that there is a need for caution in accepting new remedies as being free from a dangerous degree of toxicity. The toxic effects of new drugs are not always immediately manifest; especially is this the case if the incidence of toxicity is low and if it is dependent on a variable susceptibility. In assessing the toxicity of any substance, it is necessary to guard against confusion of thought and premature conclusions; it is just as bad hurriedly to assume a drug is free from toxicity as it is in undue haste to condemn a drug as being dangerously toxic.

Poisoning of Stock Due to the Destruction of War Stores.

In Central Scotland large quantities of war-like stores were assembled at points convenient for their rapid despatch to the combatant areas. On the conclusion of hostilities, it became necessary to dispose of this vast quantity of material. To remove it all to a port with a view to dumping at sea would have placed an undue strain on our transport system; furthermore, some of the stores had so deteriorated that they were not in a fit state to be transported long distances. To meet these difficulties, it was decided to destroy certain of these war stores by burning. Burning of many substances was completely harmless; unfortunately, the premise that large quantities of smoke bombs could be burned with safety proved to be ill-founded. In the late summer of 1945, relatively small quantities of smoke bombs were burned at intervals, but in the autumn and early winter larger burnings took place, and it was following these larger burnings that illness developed amongst livestock.

Two possibilities exist: one, that a cumulative contamination of the herbage took place and that a toxic concentration was attained after the large burnings; and secondly, that due to the heat generated in the larger burnings, a new pyrolysed compound was formed which was highly toxic to stock. Because smoke bombs had been used on a large scale during military operations and no complaints of ill-health in stock had been recorded, it was erroneously assumed that the smoke generated in the disposal of these bombs by burning was harmless; this assumption did not take into account two important facts. For military purposes, these bombs are used singly at an interval of some yards. The burning of large quantities of smoke bombs in heaps produced a concentration of the chemical products many times greater than that attained during their normal military use, and the degree of heat generated was grossly in excess of that produced when one bomb was allowed to burn by itself. Jacobs (1944) states that the fumes from smoke bombs are produced by the combination of a halogenated hydrocarbon with zinc and zinc oxide with the formation of zinc chloride ($ZnCl_2$) which is a white, highly deliquescent substance, undergoing hydrolysis with the formation of hydrochloric acid and zinc hydroxide. The principal mixture consists of zinc, zinc oxide and hexachloroethane which burns with the reaction $3\ Zn + C_2Cl_6 \rightarrow 3\ ZnCl_2 + 2C$.

What exactly happens when these compounds are subjected to excessive heat has never been determined; it has been suggested that a new and possibly more stable chlorinated hydrocarbon is formed. The enormous size of the smoke cloud formed by these big burnings of smoke bombs can be appreciated when it is realized that the cloud was still sufficiently thick to darken the sky at a point 15 miles to the east of the site of burning.

On most occasions when burning took place, the wind was in the west and the cloud was dispersed to the east of the sites of burning; but on one day, shortly after the burning began at one site, the wind shifted into the north and the smoke cloud was blown in a southerly direction from the site of the burning. On one farm, the edge of the cloud was clearly defined and it was later realized that stock in the fields subjected to the smoke clouds became ill but those in neighbouring fields which escaped the smoke cloud did not.

As the burnings took place in the autumn, it at first appeared that the cattle had all been affected at the time of the burning when at grass; but in the following spring, newly purchased Irish cattle turned out to graze became ill and it was then appreciated that the toxic principle was probably still present on the grass.

The relationship of the large burnings to the illness of stock in the vicinity appeared to establish beyond doubt that there was a direct connection between these events. At one site, the large burning took place in the later part of October, 1945, and the first cases of illness were observed in stock about a week later. At the second site, the burning took place in the beginning of December, 1945; exactly a week later cases of illness were reported amongst stock. In the third instance, the burning took place in September, 1945, and cases of illness were noticed a few days later but, as this was a subsidiary burning site and the total amount of damage inflicted was small, the cases were not reported till long after the burning had taken place.

A complicating feature of the affair was that in the centre of the second area mustard gas was being disposed of by burning. At first, acting on the assumption that the smoke cloud was harmless, the damage was attributed to the effects of mustard gas. It was very soon realized that the total quantity of mustard dealt with at this site was insufficient to contaminate even one of the affected areas. There is some ground for believing that cattle and sheep in close proximity to the site of disposal of mustard gas may have been injured on one occasion when the burning of the mustard did not proceed normally. Even if this is admitted, it only explains a few cases out of many hundreds that were involved.

The severity of the damage inflicted on stock may be estimated from the following figures of reported cases :—

	Affected	Dead	Stillborn calves
Cattle—			
February, 1946 ...	231	46	31
June, 1946	635	211	75
Sheep—			Stillborn lambs
June 1946	485	80	374

When it was decided to dispose of all cattle and sheep on the affected farms, a total of 2,347 cattle and 11,348 sheep were estimated to have been on the farms in the area when the damage was inflicted.

Before describing the diagnostic methods employed in the elucidation of the problem, it is desirable to describe the clinical signs presented in the various species. Throughout the whole course of the investigation it became abundantly clear that clinical signs of the condition were only present in these animals grazing on pastures which had been subjected to contamination by fumes from the burning of war stores.

Cattle.—The first cases observed were on the farms in close proximity to the sites of burning. The earlier cases tended to be acute in character, death taking place in a few days after the commencement of the illness. Subsequent cases were of a less acute character ; while the later cases were insidious in onset and ran a chronic course. Towards the end of the episode, some very mild cases were encountered.

The earliest clinical sign observed in all cases was lachrymation ; this was profuse and persistent. Some oedema of the conjunctiva was observed, but the discharge did not become purulent and neither keratitis nor corneal ulceration was observed. No precise explanation of the lachrymation was forthcoming ; although there was some irritation and oedema of the nasal mucous membrane, nasal discharge was never pronounced. A possible explanation of the lachrymation was that the lower end of the tear duct was occluded by oedema of the mucous membrane.

Skin irritation was a constant feature in all cases ; it varied in degree from slight blistering with subsequent excessive epithelial proliferation to extensive blistering followed by thickening, hardening and separation of large pieces of skin.

Profuse diarrhoea was an early sign in acute cases ; in the less acute cases, diarrhoea developed in the terminal phase of the illness. Ulceration of the lips, muzzle and mouth was observed in many cases. Pregnant cows aborted, the act of abortion taking place without any of the usual preliminary preparation, so that even when the foetus was very small, its delivery was very difficult. Some cows carried their calf to full term, but preparation for calving did not take place normally ; in consequence very many cases of difficult parturition were encountered. In practically every case the calf was dead ; on several of the farms involved, no living calf was born during the whole course of the episode. Retention of the foetal membranes and metritis were an almost constant sequel to abortion or parturition in affected animals. Continual loss of condition until the animal became a veritable skeleton was seen in the majority of cases, but was especially noticeable in cows and calving heifers. The milk yield of affected animals practically ceased.

Sterility was prevalent amongst affected cows and heifers. In some cases, the animals did not come in season ; in other cases, though repeatedly served, they did not conceive.

On *post-mortem* examination of acute cases, numerous ulcers were seen on the alimentary mucous membrane ; these varied in size up to that of half a crown. It was noticeable that active epithelial proliferation took place. In a number of cases " Zebra markings " of the rectal mucosa were seen. In the chronic cases there was evidence of chronic irritation of the alimentary mucous membrane, chronic enteritis being particularly marked. Thus the lesions were those that might be expected from the action of an intensely powerful corrosive irritant on the mucous membrane of the alimentary tract. Changes in the liver tissues varied from early damage to the parenchymatous tissue to fine cirrhosis ; in a number of cases, abscesses were seen in the liver substance.

Bronchitis and broncho-pneumonia were present in a proportion of cases. Enlargement of the haemo-lymph glands and haemorrhagic areas in the lymph glands were present in all cases.

Sheep.—As the contamination of the land occurred either before tupping time or in the very early stages of pregnancy, the effects on pregnant ewes were not at first seen. The first reports on sheep related to very severe debility in a batch of a hundred hoggs wintered on a dairy farm where in previous years the hoggs had thriven extremely well. So severe was the debility that in a few weeks every one of a batch of hoggs had died. The true measure of the disaster to the ewes was not realized till lambing time came round. On one farm which carried a stock of 210 ewes and might reasonably have expected a crop of 230 to 240 lambs, there were at the end of lambing 170 ewes and 39 lambs. Many of the surviving ewes had a purulent vaginal discharge. Blistering of the lips and coronets was seen in a proportion of the affected sheep.

The *post-mortem* findings in sheep were comparable with those described in cattle.

Horses.—Though many of the horses in the districts involved were housed at the time of year when the large burnings took place, a considerable number of young horses and brood mares were grazing throughout the period concerned. Two horses, both known to be working in the fields on the days when burning took place, were extensively blistered over the back and hind quarters. There was a good deal of loss of bodily condition but in the spring, when the skin condition had cleared up, both these horses put on condition again. A few cases of extreme debility in horses were alleged to be due to poisoning but it was considered that these were cases of grass sickness. On a farm where the losses among cattle were severe, a Clydesdale mare that had been grazing every day throughout the autumn and winter gave birth to and reared twin foals. In the early summer this mare and her two foals were the only bright spot in an area where an unbelievable measure of devastation had smitten the cattle and sheep.

Pigs.—There were remarkably few pigs in the area ; no cases of pigs were reported but none of these animals was going out of doors.

Poultry.—A number of deaths in poultry were reported. It was found difficult to be certain that there was a definite connection between the burning of war stores and the death of poultry. Where there was a substantial mortality amongst poultry on a farm on which the cattle and sheep were affected, and no adequate explanation of the poultry mortality could be found, the contention that the burning of war stores was the cause of the deaths in poultry was not refuted.

Dogs.—A few deaths in dogs were reported, but notice of these was not received until long after death had occurred so that there was no opportunity of investigating such cases. In some ways the description of the dogs' illnesses was not unsuggestive of distemper. It is, however, noteworthy that a shepherd who lost all his cattle also lost all three of his working dogs.

Diagnostic Investigation

When the clinical signs and lesions, other than those affecting the generative system, were considered, it appeared that these could be explained on the basis of a corrosive irritant which had been acquired by ingestion, inhalation and absorption through the skin. It was conceivable that the effects on breeding animals were the result of the general toxaemia that resulted.

The first acute cases reported by farmers happened to be in the area of the second large burning and were in relatively close proximity to the site where mustard gas was being disposed of by burning with thermite. In view of the very strong assurance given in the early stages of this investigation, it was assumed that the smoke from the disposal of smoke bombs was harmless ; indeed, it seemed a reasonable assumption that no sensible body of men would dispose of such large quantities of material if the resultant fumes were poisonous. Acting on this assumption, and because of the proximity of the first cases to the site of mustard disposal, the conception arose that the damage to stock had been inflicted by the escape of mustard gas. While at first attractive because in many ways the symptoms and lesions were those that might be expected from mustard gas injury, it was very soon realized that the area was more extensive than could possibly have been contaminated by the quantity of mustard involved. Even at this early stage it became abundantly clear that the condition, whatever it might be, was definitely confined to grazing animals. Had the district been drenched with mustard gas, many human casualties would inevitably have resulted. Thus the theory incriminating mustard gas as the cause of the condition was abandoned ; though it still seemed possible that some of the animals on two farms in close proximity to the site of mustard may have suffered from the effects of mustard as well as smoke, it was only in the animals on these farms that sharply circumscribed keloid formation on the skin was observed.

It will be readily understood that acute cases, especially as numerous, were quickly brought to the notice of the veterinary profession, but the less acute cases did not arouse the owners' alarm and their existence was not reported until they had become very debilitated and a considerable period of time had elapsed. To a cursory observer, this late reporting of the milder cases gave the appearance of a disease spreading, an appearance that was enhanced by the fact that the more acute cases reported early occurred in the centre of a segment of a circle and the milder cases reported later occurred towards the periphery of the area. A critical investigation of the area showed two salient facts ; one, that the onset of symptoms in all cases took place within a period of a few days and that there was no difference in time between the centre and the periphery of the area and second, that the condition was confined to animals

grazing on ground that had been subjected to the smoke cloud. On one farm, the calves though affected were alleged to be housed, but careful enquiry elicited the information that they had been allowed out for a varying period each day in a nearby field.

Though this comparatively early study of the epidemiology of the outbreak appeared to rule out infective or contagious disease, it was nevertheless realized that the clinical signs and lesions bore a striking resemblance to those of known specific disease.

The epidemiology of the condition was, therefore, subjected to a more critical study which elicited a number of incontrovertible facts. In three distinct areas, there was a precise relationship in time and space between two events, namely, the disposal of smoke bombs by burning with the production of a very dense cloud embracing the affected farms and the onset of illness among stock. The condition was confined to ruminants and in them was confined to grazing animals.

On several farms the only bovines that escaped illness were those permanently housed, and on one farm the sole surviving bovine was a troublesome bull that was never allowed out.

The activities of a dealer in the area provided some interesting information; he had supplied some of his customers well outside the contaminated area with cattle which had been grazing on his own contaminated fields; six lots of these cattle were traced—in every case the cattle purchased from the dealer were affected but there was no involvement of the purchasers' own cattle which had shared either buildings or grazings with the affected cattle. One lot showed a peculiar feature; this lot consisted of some cattle which had been grazing on the dealer's fields and some which had come down from Oban and were housed on the dealer's farm; the presence of clinical signs was rigidly confined to the cattle that had *grazed* on the dealer's farm. These facts left no possible conclusion but that the condition was neither contagious nor infective and that it was limited to cattle that had been grazing contaminated pastures. At this stage, it was thought that the damage had been inflicted on the animals during the few days succeeding the large burning of war stores at the three sites. Then a report was received of the development of lachrymation accompanied by loss of condition in a large bunch of newly purchased Irish cattle a week after they had been turned out to graze. Investigation of this report, and two others, showed the presence of a condition precisely similar to that already described and there seemed to be no escape from the conclusion that contamination of the ground had persisted on these farms for four months. During these four months there had been remarkably little rain; the pastures were very short and the ground was dry and hard. Subsequent events showed that after the weather broke and there was a copious downpour of rain and luxuriant growth of the grass, the pastures became safe again.

Though, as would be expected, some of the farms were affected with contagious abortion, it was found possible to show that *Brucella abortus* could not be recovered from membranes and foetus in a considerable proportion of the aborting cows and that these animals did not give a reaction to repeated agglutination tests, these laboratory findings confirming the clinical observation that the disaster to breeding stock was essentially different from an outbreak of contagious abortion. The position became clearly one of contamination of grazing by a chemical substance liberated in large quantities by the burning of smoke bombs. This substance was persistent in herbage. Ruminants were susceptible to its action and equidae appeared to be resistant. No accurate knowledge existed of the degree of heat generated by the method of burning these smoke bombs, but the chemical composition of the smoke left two possibilities; one, that the damage was caused by a zinc compound, and two, that it was caused by a compound of chlorine and carbon.

It was difficult to understand why horses should have escaped injury by zinc compounds but it seemed possible that ruminants might be more susceptible to the action of a compound of chlorine and carbon. It would have been expected that the presence of an excess of zinc compounds could be demonstrated chemically if they were present, but repeated analyses of soil and herbage failed to show any excess of zinc. Though, immediately following the burning, zinc chloride might have been present on the pastures, by hydrolysis this would be converted to hydrochloric acid and zinc hydroxide, neither of these compounds being capable of inflicting the damage described.

The chlorine compounds presented a difficult problem; tests for such compounds were not carried out until nearly six months had elapsed since the last burning; by this time the weather had become warmer and there had been some rain. These tests proved negative but it was felt that these results did not rule out the possibility of earlier and persistent contamination with such compounds.

Hexachloroethane has a boiling point of 185° C.; it forms colourless crystals which sublime without melting. It could, therefore, have been sent off by the heat generated by the large burnings which, on some heaps, was sufficient completely to fuse the metal of the canisters. Hexachloroethane has a vapour pressure of 0·22 mm. of mercury at 20° C., which would allow it to persist on herbage for a very long period during the winter and spring. Hexachloroethane has a camphor-like odour; human beings enveloped in the cloud from the large burnings mentioned the aromatic pungency of the fumes.

Gradually the stock had gone from the worse-affected farms but on the less badly affected farms there were sufficient stock, albeit they were sick animals, to keep down the grazing. By summer the problem of keeping down the grazing on the badly affected farms had become acute. It was, therefore, decided to purchase, at national expense, sufficient imported Irish cattle to carry out pilot stocking of these farms. The results may be summarized by saying that after an adequate period of grazing these animals remained healthy and on *post-mortem* examination no significant lesions were found. The safety of the crops grown in the area was tested by feeding hay from three affected farms to three groups of cattle, a control group being fed on hay from another part of the country This experiment also was negative.

It was, therefore, assumed in the autumn of 1946 that the contamination of herbage that took place in September, October and December, 1945, had disappeared. Restocking of the farms confirmed this opinion.

In order to limit the continuance of claims, it was decided to dispose of all cattle and sheep from the affected farms, either to a slaughterhouse or to a knackery, according to the condition of the animals. Careful chemical and biological examination of the flesh of animals sent to slaughterhouses established the safety of the flesh for consumption.

Thus, in what must be one of the largest recorded outbreaks of poisoning among domestic animals, there is an instance of a condition that had to be investigated very largely from the epidemiological point of view; the exact chemical cause of the condition was never discovered, but there can be no doubt of the connection between the burning of war stores and the illness that developed in cattle and sheep.

Olafson, MacCallum & Fox (1946) described what they termed an apparently new transmissible disease of cattle in New York State. Though there is a superficial resemblance between the condition they describe and that described as resulting from the burning of war stores, there are several essential differences that clearly separate the two conditions. Olafson and his co-workers state that "clinically the condition was a gastro-enteritis with severe diarrhoea." The disease was confined to six herds, one of which was infected experimentally. The early clinical signs were that the animals were off their feed, depressed and scouring. Temperatures of 105° F. to 108° F. were recorded. After the animals had scoured for a day or two, ulcers developed on the mouth and nose, and on the muzzle. There was some salivation and a mucopurulent nasal discharge was present. The conjunctiva showed marked injection but eye lesions were not present. Abortion took place in pregnant cows and heifers. From 33 to 38 per cent. of the animals in the affected herds showed clinical signs and the mortality varied from 4 to 8 per cent. The disease could be transmitted without any difficulty by drenching with faecal material or by the subcutaneous injection of blood or splenic emulsion. The disease did not affect sheep naturally and could not be transmitted artificially to them by material which was regularly infective to cattle. No bacteria could be isolated from blood or splenic emulsion that proved infective. The implication that they were dealing with a virus disease was not supported by any evidence regarding transmission of the disease by products that had been filtered.

It will be seen that they were dealing with a disease of proven infectivity. It was, however, a disease with a low mortality. The symptom of lachrymation was not present, but a mucopurulent nasal discharge was present. There is no mention of skin irritation in any form. In their *post-mortem* reports, Olafson and his co-workers make no reference to any lesion of the liver. The disease described by these authors was apparently specific to cattle and did not affect sheep either naturally or artificially. Finally, they mention that the ulcers in the mouth "heal unbelievably rapidly," a marked contrast to the chronic proliferative lesion seen in animals in the poisoning cases in Scotland.

Acknowledgments.—The earlier investigations were carried out entirely by Mr. A. S. Chapman, M.R.C.V.S.; his careful and accurate observations were a vital factor in building the foundation of the work that has been described. Seldom, if ever, can a veterinary practitioner have seen the stock of his clients struck with such a disaster as was experienced in this area.

Throughout the long investigation, invaluable assistance was given, without stint, by members of the staff of the Animal Health Division of the Ministry of Agriculture and Fisheries.

Many other individuals were consulted, and though they lent a sympathetic ear, they themselves would be ready to admit that they found it impossible to provide material assistance in probing this intriguing problem.

Fluorosis

Introduction.—The recognition in Great Britain of four independent areas in which fluorine poisoning of stock occurs as a result of industrial contamination has focused attention on this hazard to animal health.

Blakemore, Bosworth & Green (1941) described fluorine poisoning of stock in the immediate neighbourhood of brickworks in Bedfordshire. These works were using a clay of marine origin. Boddie (1945) and (1947) investigated the occurrence of fluorosis in cattle and sheep in the vicinity of a large aluminium works in Scotland. Green (1946) reported cases in cattle and sheep in Lincolnshire in an area where ironstone was being calcined with open cast coal. Bythell (1947) encountered fluorine poisoning in cattle on fields downwind from an enamel factory.

Sappington (1943) stated that there are at least 28 industrial processes utilizing or disseminating fluorine compounds.

Velu (1933) established that fluorine intoxication of human beings and of livestock in North Africa was caused by contamination of the water supplies during their passage over phosphatic strata containing fluorides. Seddon (1945) described chronic endemic fluorosis as occurring amongst sheep in Queensland as a result of the ingestion of water from deep artesian wells; this water contained 12 parts per million of fluorine. Kemp *et al.* (1942) drew attention to the fact that the domestic water supply at Maldon contained 3·5 p.p.m. of fluorine and that severe dental fluorosis of children occurred in this area.

There does not appear to be any record of fluorosis in the domestic animals developed as a result of the ingestion of water with a high fluorine content, but the possibility of this occurring cannot be ignored.

Cristiani (1927) described cases of fluorosis in cattle and sheep in the neighbourhood of an aluminium factory in Switzerland. Slagsvold (1935) reported that for several years the disease had appeared in cattle and sheep round Norwegian aluminium factories. Bardelli & Menzani (1935) gave a very clear description of the condition as occurring in the vicinity of an aluminium factory in North Italy. Lourens (1941) described fluorosis in Holland in a herd of cows pastured near a plant manufacturing chemical fertilizers. Gill (1946) has estimated that in the production of superphosphates in Great Britain, 4,400 tons of fluorine are annually emptied into the atmosphere.

The danger of using rock phosphate containing undue amounts of fluorine as a source of phosphate in preparing mineral supplements for livestock is well known. The work on this part of the subject was dealt with by Pierce in 1938.

Area Involved.—There has been a tendency to suggest that the area which was likely to be contaminated around a factory was a relatively restricted one. In Scotland, the contaminated area around an aluminium factory has been shown to extend from two miles south to at least four and a half miles north of the factory. It is clear that the extent of the area involved is dependent on the quantity of fluorine being discharged into the atmosphere and on the physical geography of the district.

Industrial Fluorosis.—The discharge of fluorine compounds into the atmosphere from industrial undertakings may be due to the accidental presence of fluorides in the raw material, as occurred in the case of the marine clay being used for brickmaking in Bedfordshire, or it may be due to the unavoidable loss of a valuable fluoride during the process of manufacture, as occurs in the electrolytic process of producing aluminium in which aluminium oxide is reduced to aluminium in a bath of molten cryolite — sodium aluminium fluoride—at a temperature of over 900° C. At this temperature there is a continuous loss of fluorine compounds into the atmosphere.

Clinical Signs.—The clinical signs of fluorosis can be divided into two main groups; in the first are the effects on teeth, the so-called chronic endemic dental fluorosis; in the second are the effects on bones and joints. The effects that result from the ingestion of fluorides depend partly on the rate of ingestion and partly on the age of the animals; if the amount of fluorine ingested is relatively small, only dental changes will result and these will be confined to animals grazing on contaminated pastures during the period when their permanent teeth are being formed. Adult animals may graze on a lightly contaminated pasture without any apparent ill-effect, though all the adolescent ruminants grazing on these pastures show dental lesions. If the rate of ingestion of fluorine is substantially higher, bone and joint lesions develop. It appears that a substantial amount of fluorine must be stored up in the bones and joints before clinical signs appear, and, if grazing on the contaminated pastures is intermittent, the cumulative process may be interrupted so that no clinical signs of bone and joint trouble are seen. Should the rate of ingestion of fluorine be still higher, osteomalacia accompanied by more or less general symptoms may develop.

Dental Lesions.—All observers appear to agree that the temporary or deciduous teeth are not involved. This clinical observation conforms with the statement made by Phillips *et al.* (1934) that they could detect no increase of fluorine in the milk of fluorine fed cows. The characteristic effect of excessive ingestion of fluorine during the period of formation of the permanent teeth is the development of mottling and pitting of the enamel. This is most easily seen in the incisor teeth. Owing to the change in the composition of the teeth, their wearing qualities are very poor. The incisor teeth wear down at an abnormal rate and in comparatively young animals are just stumps level with the gums. Deformity and delay in eruption of the incisor teeth are also seen. The poor wearing quality of the cheek teeth leads to selective abrasion and deformity. Long-pointed projections form on the teeth, these projections fitting into a groove on the corresponding teeth of the opposite jaw. Frequently, the long points impinge on the gum, injuring the soft tissues and permitting the entrance of infection. Recession of the gum margin occurs, and as a result of the local inflammation, absorption of the alveolar margin takes place. The selective abrasion sometimes exposes the pulp cavity and intense pain is inflicted when the animals drink cold water or attempt to chew their food. Infection through the injured gums and through the exposed pulp permits the development of alveolar periostitis and apical suppuration. In sheep, it was often observed that the infection entered the sinuses, and this was manifested by a purulent nasal discharge.

Though a considerable quantity of food may be ingested, affected animals cannot chew the cud efficiently; not only is the bolus of food imperfectly triturated but a good deal of the food is lost from the mouth. It will readily be appreciated that even though adequate food is available the animal cannot utilize this with efficiency; debility follows, and in lactating animals the milk yield is very poor.

Bone and Joint Lesions.—Stiffness and lameness in both cattle and sheep have been reported by Slagsvold in Norway and Lourens in Holland. In Great Britain stiffness and lameness appear to have been practically confined to cattle. It seems that before stiffness and lameness develop, the animals must graze on a pasture that is heavily contaminated; if the contamination is in the neighbourhood of 1,000 parts per million of fluorine these clinical manifestations may develop in a short time; if, however, the contamination is under 100 parts per million, five or six weeks continuous grazing is apparently necessary before the condition becomes manifest. Intermittent grazing on heavily contaminated pastures may not cause lameness, but adolescent animals may show dental lesions. Removal of the animals from contaminated pastures frequently results in a spontaneous disappearance of stiffness and lameness in about four weeks. Blakemore *et al.* described the formation of the characteristic exostoses particularly in the metacarpals and metatarsals. Similar lesions were produced experimentally by Du Toit *et al.* (1932). Such exostoses have been a very minor feature of the cases encountered in Scotland. Fragility of bone is also encountered and osteomalacia develops in a proportion of animals grazing in heavily contaminated pastures.

The precise pathology of the bone and joint lesions does not appear to be too clearly understood but there seems good ground for considering that it is due to the replacement of the normal calcium-apatite of bone by fluorapatite. Since the lesions of fluorosis in adult animals may be confined to bones and joints, the occurrence of stiffness and lameness in cattle grazing in the vicinity of industrial undertakings may on investigation prove to be due to fluorine intoxication.

Diagnostic Methods.—Clinical investigation of cases of debility in both cattle and sheep will reveal the dental lesions of fluorosis. Though these lesions are very characteristic, it is desirable that the diagnosis should be confirmed by biochemical investigations. In sheep it is usually most convenient to submit specimens of bone and teeth for analyses. Herbage should be examined for its fluorine content and the source of the fluorine must be traced and proved. In cattle it is usually convenient to obtain samples of urine. Green (personal communication) has demonstrated that in normal bovines the fluorine content of urine does not exceed five parts per million; the presence of 10 p.p.m. or more can be taken as definitely indicating that the ingestion and excretion of fluorine is excessive and dangerous.

The fluorine content of urine from nine cows from the affected area (adjusted to a specific gravity of 1·030), was found to vary from 14 to 41 parts per million.

A résumé of the results of fluorine analyses of various tissues and materials is given in Tables I and II. If the fluorine content of water is one part per million or more, dental lesions in adolescent animals will develop. Water fluorine to the extent of 0·2 or 0·3 part per million is not uncommon and appears harmless.

TABLE I
FLUORINE CONTENT OF TISSUES IN PARTS PER MILLION

Sheep					
Affected	Rib	Mandible	Controls	Rib	Mandible
1	12,000	14,100	1	478·0	415·0
2	10,400	17,200	2	83·0	111·0
3	7,000	9,420	3	382·0	238·0
4	8,660	2,124	4	343·0	269·0

TABLE II
FLUORINE CONTENT OF TISSUES IN PARTS PER MILLION

Cattle				
Affected	Teeth	Mandible	Rib	Rumen contents
1	7,600	9,200	9,100	—
2	3,460	4,360	3,220	100·3
Controls				
1	58·0	52·2	94·4	4·2
2	64·5	70·1	114·2	7·9
3	94·4	103·7	92·2	2·5

Plant Poisoning

IRIS. *Iris pseudacorus*, the yellow iris or yellow flag, is found wild in many parts of the country, including the highlands and islands of Scotland.

Nicholson (1945) states that iris contains an active principle *iridin* which is a glucoside possessing the actions of a vegetable purgative.

In 1946, an outbreak of diarrhoea occurred amongst cattle in the West Highlands. The affected animals scoured profusely for a few days; in some cases, the faeces contained blood. The temperature ranged from 103° F. to 104° F. Affected animals recovered in from two to three days. Bacteriological and helminthological examination of samples of faeces provided negative information. It was subsequently ascertained that the animals affected had been observed eating the roots of iris that had been thrown out when a drain was opened through the pasture. When steps were taken to prevent renewed access to the iris roots, the trouble stopped and affected animals recovered completely.

In many parts of the West Highlands and islands of Scotland, the meadow land contains substantial quantities of iris, the leaves of which are cut and included among the hay. It is noteworthy that temporary outbreaks of diarrhoea amongst housed cattle are quite common in these districts. In many of such outbreaks no adequate explanation of the cause can be determined; the hypothesis is advanced that in some cases an excess of iris in the hay may be the cause.

BRACKEN (*Pteris aquilina*).—The subject of bracken poisoning was reviewed by Craig & Kehoe in 1925; these authors reviewed Stockman's experiments and appeared to favour his contentions. Stockman (1917 and 1922) demonstrated that by feeding substantial quantities of bracken for a considerable number of days, it was possible to produce illness and death in young cattle, the clinical signs and lesions so produced being apparently identical with the naturally occurring condition known as bracken poisoning. Stockman contended that he had "furnished undoubted experimental evidence showing that the fronds of bracken, particularly in the season from August to the beginning of November, were poisonous by ingestion." The number of experimental animals used was very small: in the work reported in 1917 one animal succumbed, and in that reported in 1922, two succumbed. Stockman stated that "only suggestions can be made regarding its toxic principle." His suggestions were that the toxic principle is usually present only in small amounts, that it is cumulative and that it is a substance of the phytotoxin class like ricin. No chemical proof has ever been forthcoming regarding the possible accuracy of the suggestions put forward by Stockman 30 years ago.

Tocher (1941) reviewed some of the literature on bracken poisoning but made no effective contribution to the knowledge available on the subject.

In 1935 Lynch described some fatal cases of illness among cattle which had been bedded with bracken, either cut fresh or cut for a day or two before its use. Neither the description of clinical signs nor that of the *post-mortem* lesions were those usually attributed to bracken poisoning. Furthermore, Lynch stated that he was "satisfied this was a case of bracken poisoning though there were other possibilities."

Craig & Davies (1940) drew attention to deaths in calves extending over a period of two years. Their investigation demonstrated an apparent connection between the use of bracken as bedding and the illness and death of these calves. They stated that the evidence presented was purely circumstantial in character but uttered a warning regarding giving advice as to the use of bracken for either silage or litter.

Shearer in 1945 reported the results of feeding experiments on two 18-months-old heifers, one of which was given bracken only and the other a diet half of which consisted of bracken. The first heifer ate 915 lb. of bracken in 74 days (average 12·4 lb. per day) but showed no definite signs of illness until it had been on the experiment for 68 days. The symptoms were similar to those described by Stockman but they took longer to develop than in Stockman's experiments. Shearer points out that Stockman worked with younger animals and also makes the comment that he may conceivably have used bracken of higher toxicity. The second heifer, fed on a diet containing 50 per cent. of bracken, consumed 678 lb. of bracken in 78 days (average 8·7 lb. per day). It showed no signs of illness; as the supply of bracken was exhausted, the animal was killed and its organs were found to be healthy on *post-mortem* examination.

Shearer states that a search of the literature showed that no systematic chemical examination of bracken had been undertaken. In view of this lack of knowledge of the chemical composition of the plant, Shearer made a search for a substance to which the poisonous properties of bracken could be attributed. "Repeated attempts to reveal the presence of alkaloids, phytotoxins, saponins, or glycosides by the usual methods of examination were unsuccessful and attention was then directed to the type of tannin contained in the plant." Shearer then describes the chemical methods by which he determined that the tannin was present as catechol tannin. He further demonstrated that the tannin content varies with the season of the year in the following manner:—

Month	Tannin content Per cent. Dry matter basis	State of plant
May	1·63	Young shoots, fronds not developed.
June	2·81	Fronds just appeared.
July	7·00	Plant at maximum growth.
August	6·04	Tips of fronds beginning to turn brown.
September	6·26	Plant commencing to wither.
October	0·44	Plant quite brown and hard.

It is noteworthy that these figures showed the highest tannin content during that period of the year when cases of bracken poisoning are stated to be most numerous.

Shearer showed that in the animal that died there was a period from the eighth to the 13th day during which the animal was constipated and dull.

Admittedly Shearer's observations are confined to such a small number of animals that they are inconclusive, but there is sufficient evidence brought forward to merit serious consideration of the hypothesis he enunciates. The clinical signs and *post-mortem* lesions attributed to bracken poisoning were ably described by Stockman and merit quotation in full:—

"High temperature up to 107° F., loss of appetite, trickling of blood from the mucous membranes of the eyes, nostrils and vagina; passage of very dark and foul dung, sometimes mixed with blood clots; swellings under the skin; occasionally lameness; coma; and death usually in from 12 to 72 hours after the first appearance of symptoms.

"The lesions observed were haemorrhages under the skin, varying from a pinhead to a child's head in size, also into the skeletal muscles, the muscular organs, such as the heart, and into the serous membranes, but in the latter case usually petechial; congestion of the bronchial membrane, and haemorrhages into the lung substance. The lesions of the stomach and intestines require special mention. The fourth stomach and the intestines are congested. On the mucous membrane innumerable small haemorrhages are present. There are also present in the stomach and intestines, particularly in the former, larger haemorrhages, about the size of a sixpence, over which the mucous membrane has ruptured, leaving haemorrhagic ulcers. It seems to be from these ulcers that haemorrhage occurs into the intestinal tube. The latter may be thickened by infiltrated blood, and clotted blood may form casts of the lumen."

This clinical syndrome is well known to veterinary practitioners as one that occurs in cattle on rough hill grazings infested with bracken. There is, however, a difference of opinion as to whether the syndrome is caused by bracken or whether it is due to some other cause, *e.g.*, bacterial, and that bracken acts as the exciting

agent. The clinical picture is undoubtedly one of toxaemia, but this might arise from the action of a phytotoxin, or from the prolonged action of tannin on the bowel wall, or from the absorption of a bacterial toxin. Though it may be admitted that this precise clinical syndrome in cattle appears in many cases to be associated with the grazing of cattle on bracken-infested land, it has been emphasized by many observers that identical cases are observed some time after animals have been removed from the land on which bracken grows. Stockman suggested that this apparent anomaly might be explained on the basis that the toxic principle of bracken, in addition to being cumulative, required a definite time in which to exert its deleterious effects. In other words, once sufficient of the toxic principle is ingested, the animal will become ill after the necessary latent period. The apparent variation of susceptibility in individual animals and between groups of animals may be explained on the basis of the variation in the amount of bracken ingested. There also arises the question of variation in the amount of the toxic substance present in different samples of bracken. If it be accepted that the cause of bracken poisoning is a phytotoxin, then the question of immunity enters into the controversy; some animals may have, or acquire, a complete immunity, some only possess a partial immunity, whilst others possess no immunity at all. So completely divergent are the views held on bracken poisoning that in one part of the country bracken poisoning is accepted as the explanation of deaths among cattle, while in another part of the country the poisonous character of bracken is vigorously refuted. It seems too facile an explanation to state that this divergence of views is due to the variation in toxic principle in different parts of the country.

For some years there has been in Scotland a progressive increase in the number of deaths in cattle on hill grazings after an illness showing signs similar to those described by Stockman and Shearer and in which the *post-mortem* findings were also similar. In the summer and autumn of 1946 the mortality in many parts of Scotland was very high, and in consequence considerable anxiety prevails in regard to the safety of cattle on hill grazings.

It has been suggested that a factor, at least in part, responsible for the increased incidence of the condition is requirement of the Hill Cattle Subsidy Scheme, that to qualify for the subsidy the cattle must be on the hill day and night continuously for 16 weeks. Many experienced agriculturists are firmly of the opinion that in previous years they have avoided losses among their hill cattle by removing them to low ground free from bracken at three-weekly intervals. If the validity of this observation is accepted it gives force to the contention that before bracken poisoning can occur substantial quantities of bracken must be ingested continuously, such a contention being put forward by Stockman. It is also suggested that the climatic conditions prevailing in a particular season may have a considerable influence on the quantity of bracken eaten. It may be that the climatic conditions influence the amount of the toxic principle present in bracken; it would be interesting to know how the findings of the tannin content in 1946 would have compared with those Shearer published in 1945. There are apparently a number of well-authenticated instances in which cattle ate large quantities of newly cut bracken and subsequently became ill and died, the clinical signs and *post-mortem* findings being the same as those described above. These instances suggest the desirability of preventing cattle having access to areas in which bracken cutting has been going on until the bracken is sufficiently withered to become unattractive as a food.

It can justly be said that the experimental work on bracken poisoning has been carried out on too small a scale to be conclusive and the detailed chemical investigations are not yet sufficiently extensive. A large scale co-ordinated chemical and clinical investigation of the position in regard to bracken poisoning is urgently required. Pending completion of such an investigation, it would be desirable that the conditions of the Hill Cattle Subsidy Scheme should be amended to permit a farmer, who wishes to do so, to remove his cattle from bracken-infested grazings for periodic rests.

Yew (*Taxus baccata*).—The rather characteristic features of yew tree poisoning are sufficiently well known to the veterinary profession to make it unnecessary to describe them in this paper. There have, however, been a not inconsiderable number of cases of yew tree poisoning in the last few years and the circumstances of these strongly suggest that landowners, estate agents, stockowners and rural workers are not sufficiently aware of the dangers of yew tree. For instance, in two instances yew trees were felled and allowed to lie in fields in which cattle were grazing; no steps were taken to prevent cattle having access to these trees and in both instances heavy losses occurred among the cattle.

Acknowledgments.—Indebtedness must be expressed to those veterinary practitioners who either furnished information or provided access to the instances of plant poisoning quoted in this text.

Certain Common Poisons

Lead.—Though there are very many records of lead poisoning in veterinary literature, it is well known that the recognition of lead poisoning may be very difficult unless suspicions are aroused by circumstantial evidence; because of these difficulties, the suggestion is advanced that there is a distinct probability of cases of lead poisoning passing undetected.

The nervous symptoms of lead poisoning may so closely simulate those of "grass staggers" that the possibility of lead poisoning remains unsuspected. The attendant circumstances may give a clue to lead poisoning, and the occurrence of more than one case is sometimes the reason for a methodical examination of all the circumstances. This aspect of the problem of lead poisoning was brought out in great clarity by a very well authenticated and lucidly written article by Robb & Campbell in 1940. It is noteworthy that the first case was thought by the owner to be one of "grass staggers"; veterinary aid was only sought to eliminate anthrax in this case. The occurrence of a second case induced the owner to invite veterinary assistance. The nervous symptoms shown by this animal, and to a less degree by three other animals, suggested lead poisoning and on enquiry it was found that an iron fence forming one boundary of the field had been painted a month previously. Subsequent investigation proved that the animals had died of lead poisoning, the grass in the vicinity of the fence being heavily contaminated with lead.

Roberts (1931) described a number of subacute cases of lead poisoning in cows in which delirious symptoms gradually gave way to a semi-comatose condition; chorea-like movements of the lips and facial muscles were present in some cases.

In the summer of 1946, an Ayrshire heifer was found dead on an upland grazing; after anthrax had been eliminated, the carcase was removed to kennels where the only *post-mortem* finding was abomasitis. Two days later a second heifer (C.32) was found acutely ill and was removed to the farm building; when seen by a veterinary surgeon a few minutes before death the animal was showing symptoms of mania. A careful search of the grazing failed to reveal any source of lead. The only *post-mortem* lesion was a moderate degree of abomasitis. Chemical analysis revealed the presence of lead, but a further search still failed to reveal the source. Two days later a third heifer (C.34) was found dying. *Post-mortem* examination and chemical analysis again established the case as being one of lead poisoning. The details of the analysis are given in the comparative table below. In spite of protestations by the man in charge of the animals, the search for the source of the lead was extended to include the neighbouring woodlands which contained an extensive hutted camp. In this wood there was discovered a refuse dump which had obviously been visited and investigated by the cattle on many occasions. Steps were taken to ensure that the animals could not enter this woodland and no further cases occurred.

On another farm, in the summer of 1946, search of a piece of scrub wood on the edge of the field in which sudden deaths of heifers had occurred, revealed the presence of discarded tins that had contained lead paint. It is perhaps not irrelevant that the tin containing the lead paint had originally contained a proprietary brand of teat ointment. Analysis of the ingesta (X.37) revealed the presence of lead and the paint was found to contain 33·4 per cent. of lead.

On a 400 acre rough grazing five Ayrshire heifers were found dying; the predominant sign shown by these animals prior to death was profuse diarrhoea. Chemical analysis of the ingesta showed substantial quantities of lead. The source of lead was never established; a police report stated that some time before a "Spitfire" had crashed on the grazing and that its petrol tanks had burst but did not catch fire, the possibility being suggested that the leaded fuel might have been the source of the poison.

The method of reporting the quantity of lead adopted by individual analysts varies; for the purposes of comparison, the figures have been converted to mgm. per 100 grammes.

Lead in mgm. per 100 grammes of Fresh Material

	Rumen	Contents of reticulum	Abomasum	Liver	Kidney
Robb & Campbell	8·0	11·13	8·94		
Roberts (composite sample)		4·6			
C.32	1·03	56·90	10·14	4·36	16·35
C.34	8·27	11·02	149·70	7·36	28·70
X.37	1·65	—	—	7·18	48·20

It would seem desirable in cases of lead poisoning not only to establish the presence of lead in the ingesta but also to establish by analysis of liver and kidney that it has been absorbed. Particularly is this desirable if only metallic lead is found in the rumen.

Arsenic.—During the past few years an appreciable number of cases of arsenical poisoning have been investigated. In practically all cases, the cause was human carelessness. It is a constant source of surprise that so little care is taken in the disposal of the receptacles that have contained arsenical dips. In other instances mixtures containing Paris green that were intended to destroy wireworms were left in a position that permitted cattle to have access to them. Poisoning amongst calves was found to be due to their drinking dilute weed killer that had been left standing in an open vessel.

Acknowledgment.—The analyses for lead quoted in the cases described were carried out by Professor Robertson and his colleagues in the Department of Animal Husbandry of the Royal (Dick) Veterinary College, Edinburgh.

Rat Poisons

Following the activities of rat poisoners, complaints have been received of the illness and death of poultry, pigs and dogs. Isolated instances by themselves are not necessarily significant but a sufficient number of complaints has been notified from various parts of the country to support very strongly the opinion that the substances used are not innocuous to livestock.

Zinc Phosphide.—Blaxland & Gordon (1945) described 13 cases of zinc phosphide poisoning in poultry. They drew attention to the characteristic finding of a strong odour of phosphine from the crop and gizzard, and they emphasized that zinc phosphide is an extremely toxic substance for poultry.

Hare & Orr (1945) recorded one case of poisoning in a goose and three cases in pullets.

Robertson, Campbell & Graves (1945) demonstrated the toxicity of zinc phosphide for poultry and described methods of chemical analysis by which the substance could be identified. They pointed out that a tablespoonful of the rat bait normally used by pest officers containing 5 per cent. of zinc phosphide was sufficient to kill 50 or 60 hens. They also refer to the deaths of animals on premises where the bait described had been laid down with the object of poisoning rats.

The analytical method described by Robertson and his colleagues provides a satisfactory means of conducting a quantitative estimation of even very small quantities of zinc phosphide. Salt (1945) also described tests for zinc phosphide; though stating that samples should be analysed as soon as possible, Salt says that the test he describes is satisfactory for several days after death.

Red Squills.—Red squills derived from the red variety of *Urginea maritima* has been extensively used as a rat poison. It is claimed that this substance is not injurious to domestic animals and can be used with safety. This claim is based on the allegation that animals will not eat bait containing the substance owing to its unpleasant taste, and that even if eaten by pigs and dogs it will produce vomiting whereby the animal is protected from further injury. The fact, however, remains that both pigs and dogs have eaten the bait and have subsequently died. The chemical proof of the presence of squills is so difficult that scientific evidence of the cause of death has not been forthcoming. The number of such reports is, however, sufficient to eliminate the possibility of the coincidence of other causes of deaths; it is surely impossible to ignore repeated reports of the death of pigs and dogs following the use of red squills as a rat poison. Rietz & Moore (1943) reported the deaths of 35 pigs which from circumstantial evidence they concluded had died from eating "hamburger" in which red squills was incorporated, the mixture being laid down with the intention of poisoning rats. The clinical signs shown by these pigs were paralysis, laboured breathing, cough and slight discoloration of the skin. The *post-mortem* findings were broncho-pneumonia, congested internal organs (particularly the mesentery), redness of the mucous membranes of the stomach and intestines, and dilatation of the heart. There thus seem good grounds for stating that the use of zinc phosphide and red squills as a rat bait is not unattended with risks to domestic animals. It cannot be regarded as a satisfactory position that valuable animals should be exposed to these risks in order that rats, however destructive they may be, should be poisoned. A less dangerous method of destroying rats ought to be evolved.

Toxicity of Some Drugs

Sulphanilamide.—The development of diarrhoea and paraplegia in cattle following the administration of large doses of sulphanilamide has been reported by a number of observers; these effects pass off quite quickly after the administration of the drug ceases; no permanent ill-effects appear to have resulted in such cases. Little or no attention appears to have been paid to the possible consequences of the continued administration of sulphanilamide on the microflora of the rumen. Barcroft (1945) demonstrated the vital role played by the microflora of the rumen, both in digestion and nutrition and in the synthesis of vitamins. Sulphanilamide, and the sulphonamides in general, are bacteriostatic in action and it seems reasonable to assume that their continued administration may seriously interfere with the multiplication of some of the microflora, especially perhaps the cocci in the rumen. Such continued administration is not likely to take place as a result of professional advice but knowing the inclination of some animal owners to administer drugs without discrimination, there does appear to be a real danger that untoward effects might result from the irrational use of drugs of the sulphonamide series. The exact effect of these drugs on the microflora of the rumen merits attention by biochemists and pharmacologists.

Carbon Tetrachloride.—It is well known that the susceptibility of bovines to carbon tetrachloride shows very great variation. In the hands of some practitioners the drug has been used without serious loss in the treatment of liver fluke infestation in cattle, but in the hands of others it has proved notoriously toxic and quite unsafe. The following incident emphasizes the dangerous character of the drug when administered to susceptible cattle. A chemist supplied a farmer with capsules containing 2 c.c. of carbon tetrachloride for the purpose of dosing calving heifers and young calving cows for worms. The doses recommended were: yearling cattle, one capsule (2 c.c.); cattle, 15 months to two years, two capsules (4 c.c.); and cattle over two years, three capsules (6 c.c.). Out of a lot of 28 calving heifers which received three capsules each, four died within two days. Out of a second lot of 28, consisting of 17 calving heifers and eleven young calving cows, five cows, which had received three capsules each, died within two days. Thus in all, nine animals out of 56 died following the administration of 6 c.c. of carbon tetrachloride. No satisfactory description of the symptoms shown is available but *post-mortem* examination revealed a varying degree of gastro-enteritis, hepatitis, renal damage and numerous small haemorrhages in the omentum.

Nicotine Sulphate.—During the last war, when the supply of derris became difficult, a solution of nicotine sulphate was used as a dressing for warbles in cattle. A sufficient number of cases of poisoning in cattle following the use of nicotine sulphate for this purpose showed that cattle are very susceptible to the toxic effects of nicotine when absorbed through the skin.

An instance was investigated three years ago in which some 18-months-old cattle died following the use of copper sulphate-nicotine sulphate solution as an anthelminthic. The solution used was made up to contain 1 per cent. of copper sulphate and 1 per cent. of a 40 per cent. solution of nicotine sulphate, the dose being ten fluid ounces. Chemical analysis showed that the solution contained slightly more than the estimated quantity of nicotine sulphate. Very soon after the administration of the anthelminthic solution, some of the bullocks were seen to be resting on their knees: shortly afterwards, they collapsed and died. *Post-mortem* examination did not reveal any gross lesions and the circumstances of the episode left little room for doubt that these animals did die of nicotine poisoning.

D.D.T. (Dichlor - Diphenyl - Trichloroethane). — The extensive use of preparations containing D.D.T. as a parasiticide has apparently been unattended by toxic effects except in the small animals. Kirk (1946) reported the toxic effects in cats and dogs. He described two cases in cats following the application of a D.D.T. dusting powder. It is postulated that the D.D.T. was licked off the coat and ingested; in one case there was a delay of several days before the development of the signs of poisoning. The chief clinical signs shown by these cats were hyperexcitability, muscular tremors, extensor tetany and inability to stand.

Kirk also described a case of poisoning in a dog following several D.D.T. baths; similar nervous signs were manifested. In this case, it is also postulated that the D.D.T. was ingested by licking the coat.

There is good evidence that absorption does not occur through the skin from dusting powders and aqueous suspensions. Absorption from a solution in oil can take place readily through the skin and such solutions should not be allowed in contact with the skins of small animals. Excretion of D.D.T. by the kidneys is very slow and if absorption or ingestion is continued cumulative poisoning may result.

Phenothiazine.—It is extremely doubtful if any fatal case of phenothiazine poisoning has ever been proved to occur in sheep, and there is no doubt that the number of sheep dosed with phenothiazine throughout the world must now amount to many millions.

In this country the deaths of sheep alleged to be due to phenothiazine poisoning have been proved on investigation to be due to other causes.

Innes (personal communication) investigated four "outbreaks" which were found to be due to trauma to the throat by a home-made balling gun, a fatal cellulitis ensuing.

In Scotland, deaths in lambs 24 to 48 hours after dosing with a suspension of phenothiazine were found to be due to inhalation

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broncho-pneumonia. Enquiry showed that the phenothiazine emulsion had been administered by means of a syringe with a long nozzle and that emptying of the syringe had been done both quickly and forcibly.

Alleged blindness in a proportion of lambs following dosing with phenothiazine could not be dissociated from enzootic blindness and no satisfactory evidence was forthcoming that the condition was due to phenothiazine or its compounds. It has been suggested that phenothiazine may cause photo-sensitization in white-faced sheep. Swales failed to show that photo-sensitization is caused in sheep by phenothiazine or its derivatives.

In the north of Scotland a number of sheep in a flock were seen, about 14 days after dosing with phenothiazine, to be showing swelling of the face and ears. Examination of the affected sheep showed very pronounced jaundice. The condition affecting these sheep appeared to be identical with that known as "Yellowses." In cattle, the margin of safety in adult animals appears to be very wide, but it is generally considered that the margin of safety in calves is not very wide. Nevertheless, the evidence on which this opinion in regard to the toxicity of phenothiazine in calves is based cannot be said to be entirely satisfactory. In New Zealand, Whitten, Clare and Filmer reported cases of corneal opacity and temporary blindness in calves a few days after ordinary therapeutic doses of phenothiazine. They referred to definite records of its occurrence on 25 farms; only one or two animals of each lot reacted, but in one lot of 17 calves every one was affected. The condition was reproduced experimentally by dosing calves with phenothiazine and then exposing them to bright sunlight. Lesions failed to develop in dull weather or in housed calves, and if one eye was covered with a black shade lesions did not develop in that eye though the other was affected. In some animals the lesions disappeared in ten days but in others repair was much slower and the lesion was still discernible after three or four months.

The position in regard to the toxicity of phenothiazine in horses has a number of unusual features. In the early days of its use as an anthelmintic very large doses were given to horses without apparently any large number of fatalities, as much as 500 grammes being used in place of the present dose of 30 grammes. A few cases of illness and death are reported from time to time in horses that have received the present-day dose of 30 grammes of phenothiazine. While it is not always possible to exclude every other cause of illness and death in these cases, the implication of the evidence is that such fatalities do occur though not in any greater proportion than with other anthelmintics.

The mechanism of phenothiazine poisoning is very obscure; it has been postulated that the derivatives of phenothiazine cause an anaemia and that in certain animals this anaemia may be sufficiently severe to cause acute illness and death. The irregular incidence of these toxic effects points to a factor in their appearance being a great variation in susceptibility in individual animals, the vast majority of horses possessing very little susceptibility. It is, therefore, desirable to endeavour to ascertain what circumstances, if any, may influence the susceptibility. Though far from being a complete explanation, there are some grounds for the opinions that anaemic and emaciated horses are more prone to show the toxic effects of phenothiazine. It will readily be appreciated that anaemic or emaciated horses suffering from helminthiasis are prone to prove troublesome under treatment, but there are no grounds for believing that phenothiazine gives a higher incidence of toxic effects than other anthelmintics, *e.g.*, oil of chenopodium; indeed, it seems that the incidence is rather lower with phenothiazine dosage.

It must be borne in mind that any anthelmintic is a poison; phenothiazine shows a high degree of selective action on the parasites, and it is not surprising that a small number of cases of poisoning should occur; it is remarkable that they are largely confined to young cattle and horses.

STILBOESTROL.—The observations of Cowie (1944) regarding fracture of the pelvic bones in bovines following the administration of stilboestrol do not appear to have received the attention that they merited. During an investigation of the effects of stilboestrol when implanted as tablets subcutaneously, Cowie found that 20 per cent. of his experimental animals suffered from fracture of the pelvic bones. A careful investigation of these cases failed to produce any evidence that there was any appreciable change in the composition or structure of the pelvic bones. Examination of the bones suggested that the fracture resulted from trauma and that possibly changes in the pelvic morphology were a predisposing factor. The anatomical changes in the pelvis appear to be due to relaxation of the pelvic ligaments, and the trauma occurs as a result of persistent coital mimicry. Some practitioners have reported similar cases of pelvic fracture following the use of stilboestrol, and though the number of reported cases is small this risk must be taken into account when deciding to use the drug in bovine practice.

In the course of a clinical forum held by the Central Veterinary Society some discussion took place in regard to fatal sequelae to stilboestrol therapy, especially in bitches suffering from metritis. It is clear from this discussion that several of the members present were not unacquainted with this toxic action of stilboestrol. There is apparently some difference of opinion as to the manner in which this toxic action develops; on the one hand it is suggested that it is due to increased absorption of toxic products from the uterus and on the other hand it is suggested it is due to a specific toxic action of stilboestrol which may be exaggerated in animals unable to cope with stilboestrol owing to liver deficiency. Motton (personal communication) has reported the toxic action of stilboestrol in male dogs when used in the treatment of neoplasm; in these cases there is presumably no toxic absorption, and it would appear that the toxic actions are specifically those of stilboestrol.

These observations demonstrate that stilboestrol cannot be used in canine patients without risk.

Summary

In the introduction, some of the general principles governing the investigation of toxicological problems are enunciated.

A description is given of the incident in Scotland in which large numbers of cattle and sheep were poisoned by fumes liberated from the burning of war stores.

The occurrence of fluorosis in the domestic animals is reviewed.

Details are given of a case of poisoning by iris in cattle. The present position in regard to bracken poisoning is discussed. The toxicity of yew is emphasized.

A review of recent reports of lead poisoning in cattle is given and particulars of additional cases are described.

Reference is made to cases of arsenical poisoning due to careless disposal of arsenic-containing substances.

The frequency of cases of poisoning of stock following the use of rat poisons is mentioned and the existing state of knowledge regarding the toxicity of zinc phosphide and red squills is detailed.

The poisonous properties of certain drugs in regular use as therapeutic agents are considered and detailed mention made regarding sulphanilamide, carbon tetrachloride, nicotine sulphate, D.D.T. phenothiazine and stilboestrol.

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Discussion

The chairman then called upon Dr. H. H. Green, of Weybridge, to speak as the first opener of the discussion.

Dr. H. H. Green (Weybridge) who was the first opener of the discussion, said: It is a privilege to open the discussion on the excellent paper on "Toxicological Problems in Veterinary Practice" by Professor Boddie, although if any member of the audience, or Professor Boddie himself, expects criticism he is doomed to disappointment. The paper is a careful assembly of recorded observations and is of special value where these are new or personal, as in the case of the observations on fluorosis near Fort William or those on the 1945 catastrophe in central Scotland associated with the disposal of war stores. Where the subject matter became speculative, Professor Boddie has been too careful to be provocative, and so balanced in his judgments that little room for comment is left. All that can be done in opening a discussion is to offer minor expansions of his own text, from the particular point of view of the chemist.

Toxicological problems frequently arise at the Veterinary Laboratory of the Ministry of Agriculture at Weybridge, and demands for assistance from veterinary practitioners or from other departments, in confirming or refuting suspicion of poisoning, are increasing each year. Some of these are easily dealt with; for example, poisoning by lead, or arsenic, or zinc phosphide, or castor seed, or a specific alkaloid such as strychnine, but some are of a nature which would involve a research approach, such as the toxic effects of rape, or the bracken poisoning mentioned by Professor Boddie, or other ill-defined plant poisonings where the toxic principle is unknown or not easily identified; while others may be of a kind in which the techniques are available but the task of sorting out the variety of possible factors is so great that limitations of time and staff preclude effective investigation.

This last point is often not appreciated by veterinary practitioners, some of whom seem to imagine that all the chemist has to do is to carry out a few simple tests on relicta, say whether the animal has been poisoned or not, and, if it has, name the poison and specify an antidote. Since no fee is charged by Weybridge some practitioners send in samples for no other reason than that they have failed to diagnose the cause of death and want to get out of a difficulty with their clients by vaguely suggesting poisoning and taking away a sample for analysis by the Ministry. Even a negative report on headed Ministry paper is helpful in sharing the onus of failure!

It should be clearly understood that the analyst is very much in the hands of the practitioner who, on clinical history and circumstantial evidence, has to limit the field of search of the chemist by suggesting a small number of possible poisons and merely asking for verification of reasonable suspicions, or elimination of reasonably possible causes. It is an impossibly laborious task, particularly on limited or badly chosen material, to search for hundreds of possible poisons but it is usually a very simple matter to confirm or eliminate suspicion of a single named one. A few illustrations may be given, with particular reference to Professor Boddie's paper.

Lead.—Once suspicions have been aroused, confirmation or elimination is an easy matter which can be accomplished in a few hours, either on *post-mortem* material or on samples of blood and rectal faeces from the living animal. A good deal of research work has been carried out at Weybridge on lead poisoning of ruminants over the last few years and the position is that symptoms of lead poisoning rarely if ever appear before part of the lead, of which only a small percentage is absorbed in the tract, appears in the excreta. A small sample of rectal faeces taken into a clean bottle, is, therefore, sufficient to indicate whether lead is passing through in large or small amount. A simultaneous sample of oxalated blood is sufficient to show whether lead has been absorbed. Blood lead is rapidly elevated after absorption of lead by the intestine but, unlike the behaviour with many other metals, the value remains elevated for a long time and only gradually returns to normal over a period of several months. Hence, if a blood value is normal there is conclusive evidence that no material quantities of lead have been absorbed in the recent past—not for many weeks at least. If the blood value is well above normal lead has been ingested, but unless the value is high, ingestion may not be recent. If the value is very high, say ten times the normal, ingestion must have been recent. Comparison with a sample of rectal faeces taken at the same time helps to date the ingestion. If the faecal value is very high the access to lead must have been within the previous few days; if only moderately high most of the ingested amount has probably passed through and access is suggested as anything up to eight days earlier. After about two weeks most of the lead, except in the case of fragments of the metal itself, has passed on and values approximate to normal. Comparison of the two values, for blood and for faeces, usually throws a good deal of light on the circumstances of the case.

Where death has occurred a piece of kidney is the most useful diagnostic material since values for kidney cortex are always high in cases of lead poisoning. In making a *post-mortem* examination, particles of metallic lead should be looked for, as well as blackened flakes of lead paint, since metallic lead, although much less toxic than common lead compounds, can still be a cause of death.

Cases of lead poisoning occur most commonly in calves, which are addicted to licking or chewing lead painted woodwork, but may of course occur in any animal exposed to hazard through carelessness. An interesting feature of lead poisoning, in ruminants at least, is that, although acute poisoning is much more common than is usually supposed, the fatal dose is fairly sharply defined, and that small doses over a long period of time are astonishingly well tolerated. Although "plumbism" is well known in the human subject reports of its occurrence in ruminants should be viewed with scepticism. Although as little as 10 gm. of lead in the form of paint, lead carbonate or lead oxide, or as the water-soluble acetate, may be fatal to a calf as a single dose, death usually occurring between three and six days later, a quantity as large as one-tenth of this amount may be fed daily for months without symptoms. There is at present a calf at Weybridge which received 1 gm. of Pb as the acetate every day for a year, raised to 2 gm. for the following six months, without showing symptoms. It has grown normally and shows no signs of chronic lead poisoning. A few p.p.m. in drinking water are probably harmless. One calf was given over 100 p.p.m. in its total drinking water for four months before symptoms appeared. Several ewes have been dosed with 300 mg. Pb as the acetate every day for over a year without detectable effects. A large intravenous dose of a soluble lead salt to a sheep, say 100 mg. or sufficient to raise blood lead over 20 times, does not, as one might expect, cause immediate death. Death may supervene a fortnight later, from reticulo-endothelial block rather than with ordinary symptoms of lead poisoning. Although so much is known of the toxicology of lead there are several chapters still to be written.

Arsenic.—As Professor Boddie points out, poisoning is usually due to human carelessness. Diagnosis on relicta after death is usually easy, liver tissue being the most useful material. Non-fatal ingestion of arsenic can easily be established on a sample of urine, since absorbed arsenic is rapidly eliminated by the kidneys. Values are high for several days after ingestion and then tail off quickly, but are significantly high for about a fortnight. If the origin of the poisoning is suspected as lead arsenate a sample of rectal faeces should also be examined.

In passing it may be mentioned that so-called "cumulative arsenical poisoning" with long continued small doses, as distinct from "chronic poisoning" with moderately large doses, is a dubious phenomenon, at least in ruminants. In South Africa, when the popular remedy for *Haemonchus contortus* was a mixture of sodium arsenite and copper sulphate, millions of sheep were dosed without ill effect monthly throughout the wire-worm season for years, with sub-lethal quantities of 100 mg. As_2O_3 in soluble form. The dosage of one month is practically completely eliminated before the next dosage occurs. A sheep may also be continuously dosed with soluble arsenic in such a way as to maintain a urinary output of several milligrams a day without ill effect for at least two months.

Copper.—Although Professor Boddie has not referred to this element, perhaps because copper poisoning is rare, it may be mentioned in connection with sheep grazing in orchards sprayed with copper compounds. Relatively large doses of copper salts may be ingested daily for months by sheep, without apparent ill effect and without very marked elevation of blood level but with storage of large quantities in the liver. Symptoms of copper

poisoning may then appear quite suddenly and death occur with pre-mortal rise in blood copper. Symptoms and death may even occur some days or perhaps weeks after removal from the source of copper. Very high figures for copper in the liver are then found in *post-mortem* material.

Rat poisons.—Since the introduction of zinc phosphide as a rat poison, numerous cases of poisoning in poultry have occurred all over England. The compound is highly poisonous to all stock but for obvious reasons poultry, which are most likely to get access to bait in dangerous amount in relation to their weight, are the most likely to be affected. An interesting case of phosphide poisoning in a domestic cat came under observation recently, in which the fragments of a poisoned rat were found in the stomach. Relicta of larger animals, notably pigs, have also been examined at Weybridge on several occasions where circumstantial evidence suggested the possibility of phosphide poisoning, but in no case has suspicion been confirmed.

Fortunately the detection of zinc phosphide is very easy, and the rapid method of Salt, referred to by Professor Boddie, is so simple that it can be employed by any local veterinary investigational officer with results good enough to diagnose poisoning with certainty. It is a simple modification of the more accurate method which has been in regular use at Weybridge for many years, and which allows of quantitative determination of amounts as low as 0·01 mg.

It should be pointed out, however, that the detection of zinc phosphide in relicta some time after death is only rendered possible by the physical character of commercial zinc phosphide and would not be feasible if homogeneous precipitated zinc phosphide were used. In the commercial product about half consists of an easily decomposable form which yields phosphine in the alimentary tract and it is this phosphine which poisons the rat. The other half is more refractory, only yields its phosphine to treatment with fairly strong warm acid, remains in the bait after wetting and drying several times, and in the tract of a dead animal for months. It is practically non-poisonous because of its refractory character, but serves as indicator for the more easily decomposed poisonous fraction originally present in the bait.

A point worthy of mention is that the Salt test depends upon the detection of phosphorus carried over in gaseous form (phosphine) by steam and air, and that if large amounts of elementary phosphorus are present sufficient phosphorus vapour may come over to give a faint reaction. No real confusion need arise, however, since in the presence of appreciable quantities of elementary phosphorous a distinct glow is visible in the steam in the neck of the flask. The distinction between poisoning by zinc phosphide and by elementary phosphorus is also easily made at *post-mortem*.

Professor Boddie has also referred to the possibility of squill poisoning in domesticated animals and has adduced circumstantial evidence for its occurrence. In this connection recent tests by Blaxland at Weybridge should be mentioned, on "Silmurine"—a new product which is for all practical purposes the "pure" active principle of squills. It proved obnoxious to pigs, dogs and cats, and if forcibly administered in dangerous quantities it induced vomiting. Forcibly administered to fowls it could produce death, but only in quantities in considerable excess of those likely to be ingested in rat bait. It was regarded as one of the safest rat poisons although naturally not entirely fool-proof in use. The attitude of officers in control of pest infestation is that poison baits provide the only simple method of controlling rats, and that if they are used on scientific principles of baiting and removed after use, even the highly toxic baits incorporating zinc phosphide lead to very few casualties in practice. At present the choice seems to be between two evils, tolerating the enormous losses of grain which can be caused by rats or the very small total loss of stock, almost entirely poultry, caused by accidental poisoning arising through carelessness.

Drugs.—Professor Boddie has performed a useful service by calling attention to the livestock hazards involved in the use of compounds for combating disease, and it is not desired to dilate upon these otherwise than by calling attention to the rapidly expanding use of DDT, and "666" or benzene hexachloride. The most active component of the latter is the "gamma isomer," the trade name of which is "Gammexane," and which is present to the extent of about 13 per cent. in the crude product cheaply obtained by the chlorination of benzene. Both DDT and Gammexane are valuable insecticides and although the toxic dose of each is so high that fatalities following the accidental ingestion of considerable quantities in the form of sheep dip, or other agricultural product in occasional use, are almost negligible, the risks attendant on long continued ingestion of very small quantities are not yet known. Both compounds would be very valuable in storage of grain if safety margins could be established, and the problem is now under investigation by the Agricultural Research Council and Medical Research Council. Long duration tests, probably of two years' continuous feeding on treated grain, are now in progress, on laboratory animals at Porton and on agricultural animals at Weybridge.

Industrial Fluorosis.—Again Professor Boddie has summarized this topic so well that it is not desired to enlarge upon it beyond emphasizing its association with large-scale processes rather than small, and the ease of its detection once attention is called to the possibility of its occurrence. Fluorine compounds emitted from factories are only of serious consequence when associated with particles sufficiently heavy to settle on pasture before dispersal by wind over a very wide area, and when the amount is sufficient to cause pronounced contamination. If they remain gaseous they are diluted to infinite volume by air and dispersed to the corners of the world, or brought down in solution in rain in harmless traces subsequently fixed by the soil in insoluble form. In the case of the Bedfordshire outbreak referred to by Professor Boddie, as investigated by the laboratories at Weybridge and Cambridge, the particulate matter which carried the fluorine compounds on to adjoining pasture was an oily mist derived by destructive distillation, at comparatively low temperatures (400° C.), in the series of chambers served by a common chimney, of the 10 per cent. of organic matter in the self-burning clay used for brick-making. The fluorine, in the form of silicon fluoride, only came off the clay at very much higher temperatures (900° C.) but in the common flue reacted with the water vapour from the drying chambers and became partially entangled in the condensing oily vapour from hotter chambers. About half the total fluorine passing up the chimneys remained as gas and was harmlessly dispersed by wind. The other half was entangled in fine oily globules and drifted down on to the pastures in the direction of the prevailing wind, contaminating them to a dangerous extent for over half a mile, and detectably for over two miles. In the case of the Lincolnshire outbreak the particulate matter carrying down the fluorine compounds derived from the ironstone was simply the smoke from the coal used for calcining.

In both cases damage to livestock was not noticeable until the scale of operations became large. In Bedfordshire, the operations of the brickworks caused no comment during early development of the clay, and the "mysterious lameness of cattle," identified by Blakemore as "fluorosis," only appeared when the concentration of kilns reached the point of being the largest brick-making group in the world.

As for diagnosis, Professor Boddie has described the symptoms in such a way that no veterinarian should miss them in clinical cases, but in cases of doubt all that the chemist requires is a sample of urine from a suspected animal. Urinary values are high long before any clinical symptoms appear, and analysis is easy and rapid. In the Bedfordshire outbreak, the affected area was simply mapped with a veterinary catheter, and the severity of lesions readily correlated with the fluorine values in the urine.

It should perhaps be added that contamination by fluorine effluents only affects the surface of the vegetation, that tubers are unaffected and that there is no danger of absorption of excessive amounts through the roots of plants even when the quantities naturally present in the soil are very high.

Damage to Stock Associated with Destruction of War Stores.—The lengthy description by Professor Boddie of the catastrophe in central Scotland in 1945 is of special value in the sense that the observations appear to be quite unparalleled in any other part of the world, and represent a case in which extensive damage was admitted and heavy compensation paid entirely on circumstantial evidence, carefully collected and sifted without any clue to the nature of the poisonous substance concerned. The chemist was powerless to help, beyond eliminating unlikely causes which could be ruled out by veterinary inspection in any case, and if similar damage ever recurred on a smaller scale in which it was difficult to assemble so overwhelming a weight of circumstantial evidence, the analyst would again be powerless. None of the compounds actually present in the war stores was responsible, and none of the toxic compounds formed during destruction by burning has yet been identified. The laboratories at Porton hope to be able to imitate the catastrophe on a small scale in sheds in order to gain information of some fundamental value, but such investigations are likely to be intricate and "long term," and since recurrence of the disaster need never be feared, research may never be pressed to a satisfactory scientific conclusion.

Plant Poisoning.—Professor Boddie's discussion of bracken poisoning, and his references to yew and iris, raise the whole

question of research in Great Britain into plants injurious to livestock. It is true that poisonous plants, as such, do not present so serious an economic problem in the older, long-cultivated countries as they do in newer countries, such as South Africa, in which a great variety of injurious plants abounds, but nevertheless the problem is sufficiently important in Britain to justify much greater expenditure of research energy and of money than has yet been devoted to it. Although there are laboratories, notably those at Kew, where botanical identifications of all sorts are carried out, there is no laboratory in Britain which devotes its energies specifically to the relationship between herbage and the health of animals grazing upon it. Work is casual and intermittent and there is no single person who can claim to be at all authoritative, either in virtue of personal experience or continuous personal research, or even in virtue of a good command of the literature on similar problems in other parts of the world. It has long been the ambition of the biochemical department at Weybridge to form a "unit," however small, which would devote its entire energies to "plants injurious to livestock, either in virtue of botanical species, or of soil conditions in which they are grown, or of climatic factors, or of industrial contamination," but the ambition has not yet even commenced to materialize, and *ad hoc* problems have to be faced as they arise without a proper background of continuous research.

As an illustration of plants which are botanically harmless but which become toxic under certain soil conditions, the outstanding English example is, of course, any of the pasture grasses growing on Somerset soils derived from the lower lias geological formation. The pastures are high in molybdenum derived from the particular soils concerned, and this induces the scouring disease of cattle locally termed "teart." But this is an extreme example, and variations of normal composition of plants on ordinary soils of different type, so well known in fodder plants, can also occur in relation to toxic constituents if these are normally present. This is well known in plants containing alkaloids and the fact is made use of in cultivating tobacco plants of desired nicotine content.

Variations of toxicity in plants also occur with variations in climate, and in some cases the changes can be rapid. As an extreme example may be taken certain cyanogetic grasses in arid areas of South Africa, the hydrocyanic acid content of which is almost negligible when the plant is turgid in the early morning dew but quite high when flaccid in the heat of the sun at noon. There is a regular cycle of potential toxicity between day and night, although fortunately the maximal quantities of hydrocyanic acid involved are rarely such as to cause stock fatalities, and there is a simple physiological explanation for the behaviour of the plants concerned.

As an example of a more practical kind, in which soil and climatic conditions play an important part in determining toxicity, the case of *Tribulus terrestis*, the cause of the disease "geeldikkop" in sheep in South Africa, may be cited. At certain times of the year and in certain years the plant may be for animals perfectly harmless and an excellent feed. At other times it is the cause of severe outbreaks of a disease in which photosensitization is the characteristic feature, and which is not unlike the "yellowses" of Scotland. The flowering stage of the plant is the most harmful and showers of rain followed by hot weather favour the appearance of the disease.

Problems of plant toxicology are further complicated by wide variations in toxicity for different species of animals, and the fact that with some phyto-toxins there is a long latent phase before death occurs. As a practical illustration of species susceptibility may be quoted the "pushing disease" or "brain staggers" of cattle, investigated by W. H. Andrews in Natal about 1920. The causal plant is *Matricaria nigellaefolia* but bovines seem to be the only animals affected by the disease. As little as 20 lb. of the plant produced "staggers" in cattle although considerably more was usually required, but 235 lb. per head fed to horses, 28 lb. to rabbits, and 14 lb. to guinea-pigs produced no effects. The latent period in cattle was from 23 to 47 days after commencement of feeding the plant, and from seven to 42 days after cessation of feeding. Mortality may be as high as 80 per cent. The chemical nature of the active principle is still unknown, but it is stable to desiccation and to brief autoclaving, so that determination of nature is only a question of persistent effort on the part of the chemist and costly use of bovines as test animals.

Another example of a disease with a long latent period and caused by a plant is the "gousiekte" or "quick disease" of sheep in South Africa. The causal plant is *Vaugueria pygmaea* and symptoms appear in anything from 37 days to several months after ingestion, although death, as the name implies, ensues very rapidly after first symptoms are shown. Sheep may therefore graze on a pasture containing the plant, pass on to pastures free from it, and suddenly start dying off about six weeks later. This behaviour made it very difficult to incriminate the plant concerned. As little as 2 lb. of the plant may be fatal although considerably more is usually required. The most characteristic symptom is dyspnoea and heart lesions are commonly found at *post-mortem* examination. Recovery is very rare. Pathologically it may be described as a progressive myocarditis in which scar tissue replaces muscle fibres. The damage initiated by the plant proceeds of its own accord until breakdown of function occurs and rapid death ensues. The chemical nature of the poison has not yet been determined although that problem is not insoluble since the plant retains at least some of its toxicity when stored in the dry state.

Illustrations of this kind have been selected to console the audience for the present unsatisfactory status of the problem of "bracken poisoning" as described by Professor Boddie, and to indicate the laborious nature of the research required to elucidate it. It is no use presenting the chemist with a sizable sample of bracken and telling him to get on with the job of isolating an unknown substance which may not be present in his particular material, or may be readily destroyed by his manipulations. He will only end with a large variety of substances, separated after immense labour by tedious procedures, none of which is likely to have anything to do with the problem. The proper procedure is first to establish the conditions under which bracken is toxic by feeding tests on suitable animals, the quantities required to produce effects, the species susceptibility on various small animals in the hope of finding a suitable one for laboratory use, and the stability of the active principle in respect of desiccation and heat treatment. Once this information is obtained simple extraction procedures and fractionations, involving no great chemical knowledge but probably using apparatus of unusually large dimensions, should be sufficient to obtain the toxin in sufficiently concentrated form to hand over to the highly skilled organic chemist for final separation and identification. In the intermediate phase much information could be obtained on the partially purified extractives, by pharmacological techniques, and something be done to ascertain whether bracken poisoning could be combated by any means other than eradication of the bracken or keeping the stock away from it.

Mr. T. M. Mitchell (Sunderland), who followed Dr. Green, said: I would like, first of all, to thank the Provisional Committee for doing me the honour of asking me to open the discussion on Professor Boddie's paper. I have no idea why they should thus honour me because I feel that as a general practitioner who has spent most of his working life in one corner of the British Isles I am very poorly qualified to undertake such a task. However, if you will bear with me for a few minutes I shall endeavour to piece together some of my reactions to some of the problems discussed by Professor Boddie and perhaps to introduce a problem or two of my own.

Professor Boddie has covered a fairly wide field in his excellent paper. Perhaps I may be allowed on your behalf to offer the thanks of the Association for the work he has done in producing such stimulating matter for our consideration. Particularly are we indebted to him for the extremely interesting and exhaustive account of the large scale poisoning resulting from the burning of certain war stores. Perhaps of even greater interest to us generally is his résumé of fluorosis. It appears to me that we general practitioners are much more likely to meet with fluorine poisoning of stocks in industrial areas than we are with a repetition of the unfortunate mistake of the military authorities, if indeed it was a mistake, in their destruction of surplus war stores.

Professor Boddie gives my mind great comfort in his introductory remarks when he says that the recognition of individual cases of poisoning is frequently attended with difficulty, that often the clinical signs make it impossible to decide if the cause of disease is in fact a poison or something else, and that the possibility of poisoning can easily be overlooked. I have been considering how many cases of poisoning I have not recognized. We in general practice are so used to the lay animal owner coming to us with gruesome stories of malicious people poisoning their pets that I am afraid we are apt to go out of our way to prove that there is some other explanation for the fatality. Thus we are apt, unconsciously, to seek for and prove to our own satisfaction that cases of animal illness are explainable as resulting from bacterial activities or some badly understood metabolic upset. To illustrate this point perhaps I may be allowed to give the broad outline of a case of herd disease which, after reading Professor Boddie's paper, now suggests that the herd may possibly have been suffering from fluorine poisoning.

Some years ago I was called in consultation with a North of England veterinary surgeon to examine a herd of shorthorn

cattle for the condition of which the owner was blaming the smoke output of an adjoining chemical factory. Some time previously a neighbouring farmer had claimed compensation for the loss of a cow which was certified by his veterinary surgeon (not my consultant) to have died from arsenical poisoning. The factory met the claim because the management was aware that some of their raw material did in fact contain arsenic though they doubted their responsibility for the loss. In this new case they were certain that the damage, if any, was not due to arsenic because none of their raw materials had contained any appreciable amount of arsenic for some years.

The main facts elicited were that the cows, from first calving onwards, did progressively badly though excellent calving heifers were reared and grown. Examination revealed that almost all adult cattle, some 20 in number, were suffering from some degree of osteoporosis with deformities of bone, particularly evident at the head of the radius and tibia, along with rigidity of the vertebral column. Fluorosis was not suspected and, truth to tell, I was not then aware of such a condition. Examination of the pastures and crops suggested that the land was deficient in calcium and phosphorus and I came to the conclusion, rightly or wrongly, that the herd condition was due to the inability of the lactating animals to obtain a sufficiency of these minerals to replace their losses. Had I been in possession of the knowledge which I have now gleaned from Professor Boddie's paper I could, of course, have settled the problem as to whether the condition was or was not one of fluorosis by an estimation of the fluorine content of the urine. Incidentally, I have learned recently that in the same area as the case I have just described there are areas close to iron and steel smelting plants where fluorosis is undoubtedly present. This area appears to be additional to the four mentioned in the paper and I have little doubt that there must be other areas up and down the country similarly affected.

While discussing the effects of industrial pollution of the air may I venture the assertion that the output of sulphurous acid gas from furnaces in industrial districts, while not acting as a poison, does have some effect on the availability of certain minerals, notably calcium and probably magnesium. This impression has been gained by observations—unsupported, I am afraid, by any accurate data—that the incidence of hypo-calcaemia and hypo-magnesaemia in dairy cows is greater in areas close to coal burning industrial plants.

With regard to the extemely able work recorded in the paper on the mass poisoning of large numbers of stock by the products disseminated from the destruction of smoke bombs and other war stores, I am afraid I can say little. I was fortunate enough to be present in Edinburgh on one occasion when some animals from the affected district were in this college, and I had the pleasure of examining them, though merely cursorily. Apparently they were typical of the chronic type of case. They were simply poverty stricken cattle giving the picture of animals in the advanced stages of parasitism. When I was examining them I was favoured by Professor Boddie with a digest of the whole case and saw a number of the animals opened. I was struck by the absence of lesions to account for the state of the cattle. The peculiar fact that horses grazing on heavily contaminated land appeared not to suffer, raises the problem as to whether there was not some further chemical change in the toxic material, if any, which took place only in the digestive apparatus of ruminants.

I do not wish to appear to criticize the arguments put forward to prove that this enormous loss of cattle and sheep was due to poison ingested with grass. It was unfortunate, to say the least of it, that it was found impossible to establish the actual chemical composition of the toxic factor. There is no mention in the paper of any experiments on animals by feeding or otherwise. Surely losses on such a grand scale would have justified wide scale laboratory experiments with a product or products which, one presumes, could easily be reproduced in the laboratory from material similar to that which apparently caused the losses in the field. It has also occurred to me that there is a distinct possibility that there may even have been some form of atomic fission generated in the fires and that the long continued illness of such large numbers of animals might be attributed to ingestion of radio-active material.

Before leaving the subject of poisoning by army surplus stores I would like to mention an experience I had in my practice which was traced to the disposal of material by a Royal Electrical and Mechanical Engineering unit. Illness developed in a herd of some 30 yearling heifers which were grazing in a field watered by a tiny stream which was little better than a ditch. One day two of these animals were found to be ill, apparently dying and showing no other very definite symptoms but a profuse diarrhoea. They were sent off as casualties and I had no opportunity of examining them. It was several days later that it appeared that the whole herd condition was deteriorating and I was called. All were suffering from varying degrees of diarrhoea and had ceased to graze. By this time the owner had discovered that the stream at which the animals watered showed evidence of the introduction of some thick, black, oily substance. The source was traced to an effluent drain from a permanent R.E.M.E. establishment and it was learned that the material was the oily compound which was used for the creation of area smoke protection from enemy aircraft. Fencing of the stream and the introduction of a watering trough resulted in immediate improvement of the herd. Unfortunately, as in Professor Boddie's case, the actual chemical cause of illness and deaths was never established.

As I have had no first-hand experience of poisoning by ingestion of plants such as bracken, iris or yew, I shall leave comment on this part of the paper to those, and there must be many, who have first-hand knowledge. It is manifest, however, that if losses from bracken poisoning are to be reduced a great deal more experimental work must be done and a great deal more known about the exact aetiology of this disease.

Ragwort.—There is just one form of vegetable poisoning which is omitted from the paper and which I think I ought to mention, more as a warning to veterinary surgeons in general practice than for any other reason. I refer to ragwort. In many parts of the country little is seen of this plant which in others is very common. I understand that in Ireland poisoning by this plant is so well known that the disease it sets up is known as "sleepy staggers" in horses and "straining disease" in cattle. The plant is not eaten readily in its growing state by either species but may be incorporated in hay and even in silage with unfortunate results. Acute poisoning produces mania and severe cerebral symptoms while the more chronic cases result in a marked cirrhosis of the liver followed by dullness and mental symptoms probably arising from interference with liver function.

I have seen only one case in my practice—in a horse. The symptoms were so unlike any other disease that I know, that one could not but look for a cause which was out of the ordinary.

Lead.—No discussion on poisoning would be complete without some reference to lead. It is my firm opinion that illness and death attributed to lead poisoning may very often be due to something altogether different and I am going to make the somewhat controversial statement that, *in my experience,* the only form of lead which will cause the death of any of our domesticated animals is that of a considerable mass of metallic lead injected with considerable violence into a vital part of the animal's body. Perhaps it requires some courage to make such a statement, but the fact remains that in the 65 years of the existence of my practice, in an area populated by hard-headed north-countrymen who know the value of lead paint in preserving their buildings and fixtures from the ravages of a rigorous climate and an atmosphere laden with industrial fumes, no case of lead poisoning has been diagnosed.

I would agree with the essayist when he states that it is desirable that the presence of lead should be established in the body before a diagnosis of lead poisoning be assumed. The mere presence of lumps of old paint, or similar somewhat inert forms of lead, in the ingesta is not enough, though it is, of course, good circumstantial evidence.

It is difficult for a mere general practitioner to understand how such a variety of symptoms as is described in the text-books can arise from such inert material. I wonder if Professor Boddie would be good enough to tell us in what form lead is absorbed and how it exerts its effects.

Now let me turn to a few of the drugs in every day use as therapeutic agents.

Sulphanilamide.—Professor Boddie mentions the development of diarrhoea in cattle following the administration of this drug in *large* doses, but he fails to state what amount he regards as a large dose. I have had experience of a large number of cows which develop very profuse diarrhoea as the result of what we regard as ordinary medicinal doses, that is, a loading dose of 3 oz. followed by 1 oz. at eight-hour intervals. One also knows of a number of individual cows which show evidence of severe intestinal disturbance on the administration of the loading dose only. I cannot think that such results arise merely from interference with the activity of the microflora in the rumen. In several instances one has heard of the over-zealous farmer doubling the accepted medicinal doses, and in a few instances continuing with normal dosage for periods as long as 14 and

even 21 days, without any apparent harmful effect. On several occasions, as the result of such misguided zeal, one has seen cows suffering from a condition which might be described as narcosis. Cows so treated appear to be sleepy and are apt to remain recumbent, but when induced to rise they appear to lack muscular co-ordination and fall very easily. It would therefore appear that over-dosage may have direct toxic effects on the central nervous system.

Phenothiazine.—There seems to be a great deal of difference of opinion as to the toxicity of this drug. In my hands I have had no unfortunate results and in my opinion this drug is the safest and most effective yet produced for the treatment of cattle and horses of all ages. Even extremely debilitated young horses heavily infested with red worms appear to tolerate and benefit from reasonable medicinal doses. I heard it stated, on one occasion, by a very well known and experienced practitioner that if one wanted to kill such an animal the best means of doing so was to administer this drug. Such divergent views suggest that there must be a number of other factors, such as breed, environment, etc., which are of vital importance in assessing safety in the use of this anthelmintic.

Stilboestrol.—The paper discusses briefly the toxicity of stilboestrol in cases of metritis in bitches, but makes no mention of any harmful effect in bovine metritis. In the treatment of chronic endo-metritis in cows this product seems to have good therapeutic value. It effects a liquefaction of the muco-purulent discharge and probably induces a more active flow of blood through the uterus and its mucosa. Administration of the drug in the more grossly septic conditions of the newly calved cow, however, seems to me, from my observations, to lead to a greater degree of absorption of toxins from the uterus. I consider it to be most important, for this reason, not to use this drug for the cow which is suffering from an atonic uterus despite the much advertised value of the product for the expulsion of retained foetal membranes.

Before I close I should like to mention two drugs which are in everyday use and which in my hands have given evidence of dangerous toxicity in even small doses. The first is strychnine. Before the use of calcium salts for the treatment of milk fever, it was my custom, in the case of the cow which responded slowly to udder inflation, to give one dose of half a grain of strychnine sulphate subcutaneously. One day I gave a very big shorthorn cow, which had regained her feet but was very dull, such an injection. She died within half an hour in convulsions. Another similarly treated developed marked tetany but fortunately recovered. Since that day I have never given a cow strychnine subcutaneously.

Similarly I discontinued prescribing strychnine in any form to a dog after a Pekinese, given 5 m. of Easton's Syrup, developed tetany after the first and each subsequent dose. If I remember rightly, Easton's Syrup contains 1/60th of a grain of strychnine in each drachm. This dog, therefore, exhibited toxic symptoms after receiving 1/720th of a grain.

The second drug I wish to mention which is in everyday use and which appears to have dangerous effects under certain circumstances, is magnesium sulphate. In many parts of the country I believe it is common practice in the treatment of milk fever to administer both calcium borogluconate and mag. sulph., probably because it has been found that a hypo-magnesaemia is often associated with hypo-calcaemia. Some years ago I adopted this procedure, but only in cases of relapse after a successful administration of the Ca. salt alone, 1 oz. of mag. sulph. in some 15 oz. of water being injected intravenously. Two cows so treated lapsed immediately into a complete state of anaesthesia which lasted in each case for about six hours. They both emerged from this state quite suddenly and recovered normally. The suddenness of the effect of the magnesium, however, was so frightening that, needless to say, I have not continued the practice. My experience in these two cases, receiving only 1 oz. of mag. sulph., though admittedly direct into the blood stream, makes it difficult to understand why some of our north-country practitioners consider 8 to 10 oz. of this salt advisable for the treatment of grass tetany and how any patients, so treated, survive.

My conclusion, therefore, is that mag. sulph. intravenously is dangerous, though subcutaneous administration is apparently not attended by the same danger.

Thank you for listening so patiently; I trust that now the ball has been set rolling you will toss it round and a stimulating discussion will ensue.

General Discussion

Mr. K. D. Downham (Nottingham): He would give one or two experiences which might amplify a little some of the observations by Professor Boddie.

One was phenothiazine poisoning in young pigs following administration in doses of 12 to 15 gr. It always had been young pigs and pigs which had been allowed to go out. Sometimes they had been off their feed after dosing for perhaps as long as six weeks and there had been the general sunburn appearance of the skin, swelling of the ears and cutaneous oedema. In very young pigs death had occurred.

He had had the opportunity of observing hydrocyanic acid poisoning in cattle, following administration of preparations containing this substance. It was interesting that hydrocyanic acid was found in the hay used six weeks after the powder had been blown into a Dutch barn. When the hay got down to a certain level nine cattle were seriously affected and died, and several of the men working on the place were affected, a dog died and a horse was reported to have died from the same thing. Not much was known about HCN poisoning in adult cattle. The chemical analysis of the hay revealed the presence of HCN.

He had experienced the same type of trouble that Dr. Innes had communicated to Professor Boddie following faulty dosage of sheep with phenothiazine. He had been called to several so-called outbreaks and in not one had the phenothiazine been the cause of death. In many cases there had been perforation of the pharynx caused by insertion of capsules with a faulty dosing gun.

He was interested in the cause of bracken poisoning. He had a case of a farm where half the cows died after feeding on bracken pasture. They had exactly similar symptoms to those mentioned in the paper—a very high temperature, and the intestines completely filled with what looked like dried blood. After taking samples from the jugular vein one found a bi-polar organism which did not cause death in laboratory animals. The losses were so acute that the man had to give up farming.

Another interesting point was lead poisoning in poultry; this had been reported to have occurred through birds eating putty scattered about after a greenhouse was put up.

The fluorosis was also very interesting. He had some knowledge of the cases reported by Mr. Bythell. Previously the owner had reported losses in cattle after a new works had been opened, which was producing enamel, and clouds of fumes went over his pastures and affected the cattle which had grazed them.

Mr. G. Gibson (Kircudbright): One of the biggest scourges in south-west Scotland was bracken poisoning; one farmer had lost 25 of his best heifers from this cause. He had a theory in connection with bracken poisoning but had not gone into it in very great detail. If one caught hold of a frond of bracken and tried to pull it up, one cut one's hand. Was it not possible that the clinical syndrome was due to mechanical damage to the bowel by this particularly tough fibre?

He would quote a rather interesting case which occurred two years ago in February, when 17 Ayr heifers were running in a field which contained dead bracken. Ploughing operations started and the heifers got a tremendous liking for the bracken roots which were ploughed up. They followed the plough, eating them up, and the farmer thought nothing about it—he had read that bracken roots might be used for silage. All went well for a matter of a few weeks and then trouble started. Of the 17 heifers nine died with the symptoms of bracken poisoning, so that it was some substance which was present not only in the frond but in the roots which caused death.

Mr. W. G. Robinson (Carlisle) described a serious outbreak of bracken poisoning which he encountered in his practice during August to September, 1946.

Sixty-one attested Ayrshire heifers aged 16 months to two years were turned into a large field in July, 1946. The pasture was poor on account of adverse weather conditions; there was no water supply in the field, the animals having to travel over an area of land where bracken was growing in order to reach water. This had been the custom for 30 years. Four or five weeks later one animal died suddenly and on *post-mortem* examination the actual cause of death was not determined on account of the advanced state of decomposition. Three days later another heifer was found dead and on this occasion death was considered to be due to ulceration of the mucous membrane of the stomach with considerable haemorrhage. He did not realize that these animals had had access to bracken. On August 24th several heifers exhibited symptoms associated with bracken poisoning, and the remaining heifers were removed to low-lying pasture. On inspection of the water route he was amazed to see how much bracken they had been

eating. Only four inches of stalk remained visible above the ground over a large area. He attributed it to the poor quality of the herbage but the animals had apparently acquired a taste for the bracken and were keener on it than on the pasture.

He took the temperatures of all the animals and in every case there were temperature reactions of 103·5° to 108°. They showed no apparent signs of illness and were grazing in the field quite normally. Eventually 43 heifers exhibited typical symptoms of the disease; eleven of them recovered, 32 died. Some of the heifers died in a matter of six to eight hours while others lingered for weeks. The last death took place on November 6th, 1946. Sixteen heifers showed no symptoms other than elevation of temperature and one other showed no temperature or other symptoms. Animals could be grazing normally and within ten minutes exhibit marked signs of illness, including haemorrhage from the nostrils. The symptoms were identical and typical in every case except two, which developed a gross enlargement of the tongue. Cross-section of this organ after death revealed marked haemorrhage into the muscle fibres. The 16 animals which exhibited no symptoms had developed and looked very well indeed. The eleven heifers which recovered were in extremely poor condition; they had not cast their hair nor had they grown.

During the course of the outbreak he sent six for slaughter, and it was curious to note that in every case the animals bled well and the carcase set normally, although the animals had a temperature of 107° when slaughtered. There was no appearance of a fevered carcase but there were haemorrhages into the connective tissue and haemorrhagic lymph glands.

He discussed the matter with Dr. Faulds, Pathologist to the Infirmary, and as Dr. Faulds exhibited great interest he invited him to attend the *post-mortem* examinations. He had obtained blood samples from the jugular vein before death and from the heart immediately after death, and they were sterile, both by culture and by guinea-pig inoculation. He expressed the opinion that the cause of death was essential thrombocytopenic purpura; there was reduced platelet count and a delayed clotting time. Dr. Faulds expressed the view that the condition was a toxaemia, and according to him similar *post-mortem* lesions were observed in human beings after toxic doses of several drugs including the sulphonamides. From this experience it was obvious that the time was ripe for widespread research into the matter. His client reckoned that his loss was in the region of £1,500.

Dr. H. G. Lamont (Belfast) thought it might be worth while mentioning that there had been some trouble with castor bean poisoning in Northern Ireland. In Northern Ireland the same rationing system is in force as in England and some of the ration sent for cattle and poultry contained up to 8·2 per cent. of castor bean. Fortunately there was a definite relationship between the arrival of this meal on the farms and the deaths of the animals. The interesting point was that with the shortage of feeding-stuffs it was given to all varieties of animals and there had been deaths in horses, bovines, pigs, ducks, hens and dogs. On one farm two dogs fed from the poultry trough and both of them died. The symptoms that the animals showed were chiefly gastro-enteritis; there was acute abdominal pain and the deaths were fairly rapid from the onset of the symptoms or from the intake of the meal. Some of the animals died within twelve hours, some 24 hours, some 36 hours afterwards, and the animals which survived sufficiently long developed diarrhoea and blood appeared in the excreta. It was a revelation just how dangerous castor beans could be.

The poultry showed great dullness and depression and were quite sleepy. After-effects were very serious. It appeared to affect the reproductive apparatus; the birds had not commenced to lay or recommenced as the case might be and were in poor condition on the farms concerned up to four months afterwards, so that it was a serious matter.

Another form of poisoning which had occurred was poisoning with sulphamethazine in poultry. Manufacturers stipulated that it should not be used as a treatment for coccidiosis for more than a five-day to seven-day period, but poultry-keepers fed it over longer periods with disastrous results.

A meeting of this character brought these matters to light and showed us how little we knew. The veterinary surgeons first concerned with the castor bean poisoning diagnosed poisoning from the meal and sent samples to the analysts who examined for all the poisons known to them with negative results. They had not suspected castor bean, so that a negative analytical report might not mean much.

The question of photo-sensitizing had been mentioned. There was a considerable incidence of photo-sensitization in sheep in Northern Ireland and farmers in that area blamed it on the ingestion of a small plant called bog asphodel (*Narthecium ossifragum*) and were quite satisfied that it was the cause of the condition. One also had photo sensitizing in cattle and just before he left one veterinary surgeon had consulted the laboratory about two deaths out of five animals which had typical symptoms—blisters in their ears and swelling of the muzzles with oedema and cracking of the skin. The laboratory could not make any suggestions as to what was on the pasture as they had not seen it, but the owners stated that a similar happening occurred about 20 years ago. A long time interval was one of the things which could not be understood. There might be an outbreak of bracken fern poisoning, no cases for ten or 15 years, and then there was another outbreak on the same farm. There must be a very great deal in the aetiology of these things which they did not understand; there was room for research, and he hoped that Dr. Green's project would materialize. There must be a number of plants which produced poisoning under conditions as yet not understood.

Dr. E. L. Taylor (Weybridge) wished to throw out a suggestion in connection with poisoning in general, something after the manner of the suggestion which was thrown out by Mr. Mitchell concerning atomic fission. He hoped it might not be considered too hare-brained. He wished to say something about the possibility of third factors having much greater importance in connection with certain poisonings than is generally thought.

The occasional poisoning from the wide use of carbon tetrachloride and phenothiazine had been mentioned in Professor Boddie's paper. Very little was known of the real cause of these intoxications, but presumably they had something to do with some third factor. It had been shown, for instance, in experimenting with dogs, that they could be rendered sensitive to carbon tetrachloride poisoning if they were starved of calcium.

He thought these sensitizations were particularly obvious in connection with parasiticidal drugs, because these drugs were so widely used. When a drug of that kind came from the experimental laboratories and was generally regarded as safe, it was used in thousands, tens of thousands or millions of doses. Phenothiazine was one of these substances; it had been used in millions of animals but now and again sensitive groups of animals were encountered. He thought it clear that the animal body was not always the same, but that factors of which we know very little may change its reactions not only to carbon tetrachloride or phenothiazine or to other widely used parasiticidal drugs but also to a large number of potentially toxic substances which in the ordinary way can be safely dealt with in the animal body. All the parasiticidal drugs were, of necessity, poisonous and the dosage was so judged as to be safe for the host but poisonous for the parasite, and he thought that very little was required to change the nature of the host in order to render it sensitive also to the poisonous action of the drug. He did not see why that principle should not apply to a lot of vegetable poisons and perhaps, in particular, to bracken poisoning.

With regard to the suggestion made by one contributor that the mechanical injury was the cause of death from bracken poisoning, he would give one experience of his own in connection with a certain research problem which would suggest it to be an unlikely explanation. This experience concerned a series of experiments which were carried out on rabbits, in an endeavour to find out whether penetrating nematode larvae might assist bacterial invasion of the animal body. No action was observed in the course of the trial so in order to ascertain whether any kind of injury to the bowel wall might assist the bacterial invasion a few rabbits were fed on a ration with which a large quantity of powdered glass had been mixed; there was, however, no result whatever. A ration was then mixed with glass wool, yet, although this was found to be of such an irritating nature that it resulted in the arms of the laboratory assistants (who cut up the wool with scissors) becoming inflamed, there was still no reaction seen in the rabbits. It seemed very unlikely, therefore, that roughage such as that in the bracken could be responsible for injury to stock.

Miss Olga Uvarov (Ewell) asked if Professor Boddie could enlarge upon the question of the toxicity of the sulphonamides, especially in small animals? She had, in a few cases, both in dogs and cats, had experience of hyperexcitability, amounting to a complete frenzy in one case. She was called out one night to see a cat, described as a very urgent case, and on arriving had found that the cat was up the chimney—the owner had made a mistake in dosage, by comparing the symptoms and dosage which was prescribed for her husband, to those of the cat, and instead of giving the cat one tablet of M. & B. 693, followed by a half tablet, two tablets every four hours had been administered. It was ten to twelve hours later that the cat could be examined.

A disturbing feature, which sometimes occurred, particularly in highly strung dogs, was that after the initial and subsequent doses of sulphapyridine, they sat and stared for some hours at a time, and she would like to know if there was any explanation for this.

Several cases of D.D.T. poisoning had been encountered, all in

smooth-coated dogs, which had been brought to an animal clinic for the poor, where the owners simply went to the chemist and bought a box of D.D.T.

As far as stilboestrol was concerned in small animals, it was proving to be of dangerous nature unless used with caution—particularly in the treatment of pyometritis in the bitch. In two cases of death, where stilboestrol was used in the recommended doses, *post-mortem* examination revealed liver degeneration.

The first reports on stilboestrol in veterinary practice were proving of less value than claimed for, and in a personal communication Professor Dodds of Middlesex Hospital—the original worker on this oestrogen in this country—had pointed out that it should be used only in specified cases, where one was sure of one's ground.

Even in some cases of misalliance in the bitch, one had to consider the subsequent history of the bitch, and at times owners preferred a mongrel litter, rather than risk any possible ill-effects of this administration.

With regard to Easton's Syrup, she had been told that it was a question of increasing the dose very gradually and carefully. Dogs could stand quite large doses as long as they were given carefully and it was one of the favourite tricks of some of the greyhound people, if they wanted to do anything to upset t dogs running, to give them an amount of Easton's Syrup which would alter the speed.

Mr. R. W. Johnston (Longside) said that it was interesting to note that bracken poisoning had assumed alarming proportions in the south of Scotland and parts of England, but in Aberdeenshire he believed bracken poisoning was practically unknown. He would not say it was because there was no bracken, for he had seen young stock raised amongst first-class bracken which produced no adverse effects. He suggested that perhaps there was a protection, perhaps the northern stock were more hardy, or more discriminating in their feeding.

He was interested in Mr. Mitchell's remarks, particularly with regard to sulphanilamide. In the north they could give a loading up to six ounces with no ill-effects.

With regard to phenothiazine, he found that a horse could scarcely tolerate a dose of one ounce in his area. It had a most marked effect in an animal in fairly good condition. A thin horse would stand a fair dose, but an animal in fair condition it certainly upset. One found that the blood count was lowered and the blood sedimentation rate increased from 30 to about 60 in a quarter of an hour. He always felt scared of giving a horse an ounce of phenothiazine.

He had found that cattle were quite sensitive to phenothiazine, but by giving a small dose and then a good medicinal dose, it had no ill-effects; whether the small dose desensitized the animal or not, he could not say.

With regard to stilboestrol, he was afraid it had been given indiscriminately. Stilboestrol had a very marked carcinogenic effect, and he would be pleased if Dr. Boddie could give some further information on the carcinogenic effect and indiscriminate use of stilboestrol.

The Reply

Professor Boddie—in reply—expressed his thanks for the kindly way in which his paper had been received. Admittedly there was a lot of work in writing it, but those who had put on paper something on which they had worked knew that it was a pleasant job. The size of the audience was probably some indication of the interest which the subject aroused.

Dr. Green had made a most valuable contribution; particularly would he like to underline his remarks about the difficulties which the chemist encountered and he might also say the sometimes almost unreasonable requests made by veterinary surgeons. The chemist could be helped very much if he was given the history, the symptoms, the clinical signs and one's interpretation of them, and he would like to emphasize what he said at the beginning of the paper with regard to the importance of the epidemiology of the outbreak. It might be that he was particularly keen on epidemiology, but it seemed to him that very often the study of the epidemiology of the outbreak was of infinite help in differential diagnosis between an infectious disease and poisoning. He did not think he was altogether wrong in saying that perhaps in this country the study of epidemiology had not always received the attention it should.

Dr. Green had given a very valuable résumé of the work that had been done at Weybridge on lead poisoning. Those who had heard it would no doubt appreciate it and he was sure that when they came to read it. it would be appreciated still more. He had the privilege of reading Dr. Green's remarks before he made them, and found the reading of them particularly interesting and valuable.

It was interesting to hear his observations with regard to copper. He thought he was right in saying that this was a problem particularly in the south-eastern counties. It was interesting that at the International Conference of Pure and Applied Chemistry one of the speakers mentioned the poisoning of sheep after a long period of using copper sprays. The death of a cat after eating a portion of poisoned rat interested him because recently a similar thing had been encountered in foxhounds.

Dr. Green seemed to think that squills was reasonably safe, but he made the essential qualification that it was safe if used on sound scientific principles. He did not know if it was a libel to suggest that these sound scientific principles were not always applied. Dr. Green also emphasized the urgent need of extended research, also the difficulties which had to be overcome. He thought the latter so important because one must realize that any work of this kind was likely to be a very long piece of research and the difficulties were very considerable.

Mr. Mitchell raised a pair of very interesting points. He found it a little difficult to accept his outbreak of osteoporosis as being due to fluorosis, and was inclined to think that the original suggestion of deficiency in calcium and phosphate was the correct one. It was interesting to hear that in all probability he had recorded still another area of fluorosis. He could not really answer Mr. Mitchell's question about SO_2 but in the neighbourhood of their big power station the output of SO_2 had a most lethal effect on the plants in the area.

In regard to the poisoning of animals by the destruction of war stores, there had been some experiments but they were not carried out by himself. He did not approve of the way in which they were carried out and therefore deliberately avoided mentioning them.

He did not know what to say with regard to atomic fission. He had a series of queries and exclamation marks on his notes. He was not sufficient of a physicist to answer that.

Mr. Mitchell's observations on the oily compound of the material used in the production of a smoke cloud were very interesting and like his own observations were rather inconclusive.

He was also glad that Mr. Mitchell brought in the question of ragwort, because it was an interesting problem. In the Hebrides there was a condition known as Böl in which the horses became sleepy and stupid. There was some ground for thinking that condition might be due to continued ingestion of ragwort, which was very prevalent.

With regard to lead, Mr. Mitchell seemed to have expressed some doubts and up to a point he was willing to agree with him. He was quite right, in so much as there were a lot of reported cases of lead poisoning which were not really proved, and it was important to remember that the mere discovery of lead in the ingesta was not conclusive; it was essential to prove that the lead was absorbed.

Dr. Green said that the toxicity of lead compounds was not related to their solubility in water. The toxic dose of lead for the young calf, for example, was about 0·2 to 0·3 gramme per kilogram body weight, whether it was ingested as lead carbonate in paint, or lead oxide in red lead, or as the water-soluble lead acetate.

Water-soluble lead compounds reacted with the contents of the alimentary tract, even with the protein of foodstuffs, to form insoluble lead complexes. Most lead compounds, however, were slowly dissolved to a small extent in the intestinal tract and probably absorbed as lead "ions" rather than as any particular compound. Even the ore "galena," or metallic lead itself, was slightly attacked, although the rate of solution was so slow that fatalities rarely occurred from accidental ingestion.

Professor Boddie, continuing, said that with regard to the question of symptoms, one of the difficulties of spotting isolated cases of lead poisoning was that except for some of the nervous symptoms there were really no symptoms of lead poisoning.

Mr. Mitchell helped him a lot with regard to drugs, and his remarks linked up with some of Miss Uvarov's remarks. It seemed fairly clear that there were animals which were particularly susceptible to the sulphonamides. Some of these animals might be susceptible from their early days, but there were also some animals which developed susceptibility by early dosing. He was one of those individuals who at one time was not susceptible to sulphanilamide; now he was very susceptible.

Then there was the type of case which was associated with interference of the microflora. Mr. Mitchell referred to narcosis, and Miss Uvarov referred to the staring phase in dogs. He did not think this could be explained in very exact pharmacological terms, but if the animal felt anything like a human being who was once susceptible to sulphanilamide, it was at least a line on the explanation.

A certain divergence of view had manifested itself with regard to phenothiazine. He agreed with Mr. Mitchell that it was

unfortunate that the individual in the south with whom the matter was discussed some months ago was not present to give his views that afternoon. But did not there rather tend to come out in the discussion this: that if there was such a divergence of view there must be a very great variance of susceptibility, and it was obvious that they did not really know the factors which caused susceptibility, nor the particular set of circumstances.

Similarly with regard to stilboestrol. The warning he had tried to sound in the paper had been emphasized both by Mr. Mitchell and Miss Uvarov. Mr. Mitchell referred to the danger of strychnine in cattle and the susceptibility in dogs. In the last few years he had had several cases in which a veterinary surgeon had found himself in a rather difficult position with regard to this strongly irregular susceptibility of cattle and the marked idiosyncrasy of the smaller dogs. Mr. Mitchell gave a possible explanation of his observation regarding the injection intravenously of one ounce of magnesium sulphate into a dairy cow. Dr. Green worked out mathematically that the dose was quite safe, but possibly the explanation was the concentration of the solution and had it been given slowly it would not have produced these symptoms. There possibly had been a sudden flooding of part of the blood stream, which reached the brain and possibly produced this temporary but deep narcosis. The rapid recovery tended to stress the possibility of that being the true explanation.

Mr. Downham dealt with phenothiazine in pigs, and gave some very interesting information. He underlined the fact that quite often so-called phenothiazine poisoning in sheep was really trauma of the mouth or pharynx. He also instanced a very interesting example of hydrocyanic acid poisoning in cattle after treatment of the hay. The speaker had no great experience of that particular type of poisoning. His observations of lead poisoning in poultry due to the use of putty were very important.

He thought Mr. Gibson produced a rather valuable observation with regard to the poisoning of animals with the roots of bracken. That might be a very useful line for people investigating bracken to follow, because it was obvious that the fronds varied very much in their composition. It might be that by examining the roots, one would find it more easy to discover the nature of the toxic principle. The idea of mechanical damage was not entirely new, but he did not think at the moment it was any more than an idea.

Mr. Robinson gave a very good account of bracken poisoning, again emphasizing the importance of the problem.

Dr. Lamont spoke of the interesting instance of castor bean poisoning and of the danger of sulphamethazine poisoning. Then he raised the question of photo-sensitization, probably due to bog asphodel. Most of the animals in these islands were so unacquainted with sunshine that they were just as sensitive to it as human beings. He did not believe one got real photo-sensitization in Great Britain, it was the unusual exposure of the animal to sunshine that caused the condition.

Dr. Taylor introduced the possibility of a third factor. Undoubtedly there was some unknown factor in regard to the susceptibility to phenothiazine, the sulphonamides, carbon tetrachloride, and that obviously opened up a wide avenue for research.

He thought he had dealt with most of Miss Uvarov's points, and there only remained one point raised by Mr. Johnston and that was giving of small doses of phenothiazine to cattle followed by a large dose. He seemed to suggest that that was in his experience a useful method. It was a little difficult to understand why it should be, because most of one's experience had not been that cattle, or for that matter any other animal, became less or more susceptible to phenothiazine, but rather if they were susceptible the effects appeared. He, too, underlined a warning in regard to stilboestrol. He said that bracken poisoning was practically unknown in his area. If observations of that kind had not been made there would never have been any controversy about bracken poisoning. Some of them remembered in *The Veterinary Record* about 1922-24 that for weeks letters appeared from either side in regard to whether or not bracken was poisonous, but it did seem that the vast volume of observations that had been made, particularly in 1946, tended to suggest that even if one did not believe in bracken poisoning there was a problem urgently in need of research.

Weekly Wisdom

We have always felt that those who come into our profession must be drawn in their younger days by a desire to assist the suffering dumb creation.—Principal William Mitchell, President, N.V.M.A., replying to the toast of the Association at the Annual Dinner.

THE VETERINARY RECORD

September 27, 1947

A MEMORABLE CONGRESS

IT is pleasing to note that in these days of post-war austerity it is possible to hold such an ambitious and successful Congress as took place in Edinburgh. We are confident that it will long be remembered not only for the high standard of the scientific papers and the generous hospitality of the Edinburgh people, but even more for the happy atmosphere which pervaded all the functions that were held.

The organization behind the Congress was excellent and a good balance was achieved between the scientific and the social aspects. We are all grateful for the wisdom of Professor Mitchell in determining to avoid anything of a controversial or political nature and at the Annual General Meeting even the thorny and much discussed subject of the proposed change in name of the Association was finally settled by prolonged adjournment after a discussion in which was manifest both the loyalty of our friends from Ireland to the Association, and the reluctance on the part of those on this side of the Irish Channel to take any action which would hurt their colleagues across the water.

The papers were a nice balance between the clinical and the more academic sides of our science, and the decision to give a whole morning to each paper allowed ample time for discussions. The programme of carefully selected operations and demonstrations and the trade exhibitions were most informative.

The social functions were very happy gatherings, starting with the reception by the Scottish Metropolitan Division and including a very hearty welcome at a reception held at the City Chambers when our members were received by Bailie Bruce Turnbull and Mrs. Turnbull. It is only to be regretted that owing to limitations of space, it was impossible to accommodate all those who wished to attend.

Some very interesting conducted tours which gave delegates and their ladies a chance to visit places of technical, historical and aesthetic interest were much appreciated.

The presence of such large numbers of our own members and of many delegates from other countries was demonstrative of the interest taken in Association affairs, and must have been a source of gratification to the members of the Provisional Committee who worked so hard for their entertainment. Much experience was gained at Edinburgh which will be invaluable to those organizing future congresses. It is possible that the Committee were overambitious, and some felt that the programme was too full and more time might have been allowed for informal meetings and so on.

Debts of gratitude are owing to so many that it is perhaps invidious to select any special names, but to Professor and Mrs. Mitchell and to Professor Robertson (Local Secretary) and the other members of the Provisional Committee our very special thanks are due, and must be officially recorded.

No one can doubt the tremendous benefits which accrue from a successful congress. The stimulus to scientific thought, the corporate spirit developed, and the goodwill produced between members of the profession here and our colleagues from abroad, are sufficient reward to all those attending.

NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

THE SIXTY-FIFTH ANNUAL GENERAL MEETING

Public Proceedings

The Sixty-Fifth Annual General Meeting of the Association was held at the Royal (Dick) Veterinary College, Edinburgh, on Wednesday, July 30th, 1947, with the President, Professor W. M. Mitchell, in the chair.

The list of those attending Congress will be found following the President's Address at the commencement of this issue. Following is the list of members who sent apologies for absence from the Annual General Meeting: Mr. F. Beckett, Professor T. J. Bosworth, Miss Mary Dalby, Mr. S. J. Edwards, Capt. J. Fox, Miss M. J. Freak, Mr. L. St. Bel Golledge, Dr. W. S. Gordon, Mr. A. M. Graham, Major R. C. G. Hancock, Mr. S. F. J. Hodgman, Dr. Tom Hare, Messrs. H. F. Hebeler, P. J. Howard, Dr. J. R. M. Innes, Mr. T. H. Jones, Miss J. O. Joshua, Professor W. Kearney, Major Hamilton Kirk, Professor J. McCunn, Mr. H. T. Matthews, Dr. R. F. Montgomerie, Messrs. J. K. L. Pearson, John D. Peele, L. E. Perkins, Brigadier Plunkett, Mr. Alfred Sams, Lt.-Col. P. J. Simpson, Dr. A. W. Stableforth, Major J. H. Taylor, Messrs. J. F. D. Tutt, A. H. Watson, J. B. White and Professor G. H. Wooldridge.

The General Secretary (Mr. F. Knight) read the notice convening the meeting.

Welcome to Overseas Delegates

The President extended a welcome to the many guests of the Association from overseas. He had long cherished the idea of bringing together veterinary representatives of the countries of western Europe and, if possible, still further afield.

The Association was fortunate in that the response to the invitations to attend the Congress was very gratifying, and he would invite all foreign delegates present to come and sit on the platform. It was very unfortunate that Colonel H. E. Egan, U.S.A., was recalled as soon as his 'plane arrived, but he left an address which he would ask the Secretary to read.

Address by Colonel Harold E. Egan, U.S. Army Veterinary Corps

I feel greatly honoured in having been chosen as the American representative at this Congress. I suppose there were several reasons for my being selected, one of them being my present geographical location. But I think the main reason may have been my name.

"Egan" is a purely Irish name, and Irish names seem to have taken on an international aspect in recent times. For example, there are Englishmen named O'Shaughnessy, Norwegians named Kelly, Argentinians named O'Farell, Mexicans named O'Bregon—and I believe I recollect having read something about a Palestinian named Connor. Therefore, since we in the States are a rather cosmopolitan breed, it seems appropriate that, everything else being equal, an Irish name should represent the United States at an international gathering such as this. Lest those of my hosts who are Irish should think I am about to break the news that this Yankee is not an Irishman after all, I hasten to say that I am all Irish. Both my parents came to America from the "Emerald Isle."

What ver national or international virtue my name may borrow, it is as an American veterinarian that I bring you greetings from the American Veterinary Medical Association, through its President, Dr. B. T. Simms, and as an army veterinary officer I would like to include greetings of my Chief, Colonel J. A. McCallam. American greetings to the veterinarians of England, Ireland, Scotland and Wales must necessarily be mixed with gratitude—gratitude for the advances and techniques which the British and Irish practitioners have made in the veterinary profession.

During World War I, I happened to have been detailed as a liaison officer with a British board of officers engaged in procuring some of our unassigned horses held in remount depots in America. It was in the summer of 1918 when the Germans were making their greatest push. I was amazed to see your veterinary officers coolly take time to select their artillery horses with great care. In that time of desperate rush, your officers used precise and practised judgment in picking the horses which they knew would do their job well. We developed great respect in war-time for the skill of British army veterinarians in animal management, particularly in their method of quick distribution of horses to units, a practice which avoided massing animals in paddocks and which we all found was a great factor in preventing incapacitation of animals from injuries.

Long before either of the World Wars, Americans had learned to respect British perfection in animal management. The British contributed much to the beginnings of the veterinary profession in America. In earlier years, many of the American army veterinary officers were British, and lessons learned by American veterinarians from the British found application in rural communities of the United States, where British techniques in animal management were used as models for local practice. Your control of rabies and canine distemper exemplifies efficiency in modern preventive medicine.

So it is with deeply felt recognition of the contributions of British and Irish veterinarians to the advancement of their profession in America and in the rest of the world that I bring greetings of your profession in America and in the United States to this Congress of the National Veterinary Medical Association of Great Britain and Ireland.

Colonel Egan's message was greeted with loud applause.

The President said that he had had a letter from Dr. Campbell of Chicago; many would remember him as a great and close friend of veterinary medicine in this country. He sent greetings from the profession in his part of the States. (Applause.)

The President, after making short comments on the countries who had sent representatives to Congress, said that it was unfortunate that Britain's oldest ally (Portugal) was unable to send a delegate this year. There were other countries which he would like to have seen represented—Czechoslovakia, the U.S.S.R.—because after all, in an association such as this, until the nations were tied together in every possible way, veterinary science, as other sciences, could not advance for the good of all and it was the "National's" aim to develop friendly professional relations with all nations to this end. (Hear, hear.)

President's Address

Professor Mitchell then read his Presidential Address, which was enthusiastically received. It is reproduced at the commencement of this issue.

Mr. G. N. Gould proposed a very hearty vote of thanks to Professor Mitchell for his presidential address, which reflected the great interest of his life—veterinary education and the teaching of veterinary science. He had reminded his audience of the true spirit of education and the necessity for the training of men to think and understand the principles and art which were the fundamental basis of science and essential for the proper education of their students.

As Principal of the Royal (Dick) College, and a member of the Council of the R.C.V.S., he was well equipped to put forward the progressive suggestions made in his address. He had spoken of the enactment of the legislation which would enable the proposed changes in veterinary education to go forward and bring about proper control of unqualified practice.

Professor Mitchell had also spoken of the wonderful scheme which was to be brought into effect in conjunction with the University of Edinburgh for training of the "Royal Dick" students. Every college in the country would be more jealous than ever of the facilities available at the "Royal Dick" for the teaching of veterinary students.

He tendered a very sincere vote of thanks for the inspiring presidential address to which they had listened with so much pleasure. (Applause.)

Meeting Places for 1948 and 1949

The President: The Council recommended that the next Congress be held at Southport. This was a long-standing invitation and he moved accordingly. This was seconded by Mr. Wright and carried.

We could not but regret the absence of any representatives from the Department of Agriculture for Scotland at the Annual Dinner. The Association deplores the continued bad relations which exist with the Ministry of Agriculture. The answer given by the Minister of Agriculture to a question in the House during Congress Week introduced an unfortunately jarring note into the proceedings. Nevertheless we do not believe that the trouble is due to ill-will so much as to lack of understanding, and the Association is exploring every avenue to re-open the negotiations so unhappily terminated a year ago. Let us look forward to the 1948 Congress confident that long before that our differences will have been happily settled.

The President said that in 1949 there was to be an International Veterinary Congress in London, which would have the full support of the profession in this country. The Council felt that it would be inadvisable to hold the full "National" Congress that year, so there was no necessity to plan for 1949 until next year when arrangements could be made to hold the Annual Meeting of the Association in London.

For 1950 the Association had been invited to go to Cardiff. The City of Cardiff would like to know whether the Association would consider accepting their invitation.

The meeting indicated that it would consider going to Cardiff in 1950.

Election of President for 1947-1948

The President: It was the unanimous recommendation of the Council that Mr. L. Guy Anderson should be elected President of the Association for the coming year. Mr. Anderson had been Vice-President during the past year, and had put in some very good work.

The proposition was carried unanimously.

Mr. Anderson thanked them for the great honour they had done him in electing him as their President for the coming year, and he would thank Professor Mitchell for the very gracious way in which he put forward the Council's recommendation. He would assure them that he was well aware of the responsibilities invested in the President, and with the support that he knew he would get from all of them, he would do his best to discharge those duties as well as they had been done by his predecessors.

Presentation of Dalrymple-Champneys Cup and Medal

The President said that it was his duty on behalf of the Association and the donor of the Dalrymple-Champneys Cup to hand it to Dr. E. L. Taylor as a token of the great esteem and regard in which his research and work throughout his life was held by the Association. (Applause.) Whenever Dr. Taylor looked at the cup he could feel a certain amount of satisfaction that his fellows had tangibly shown an appreciation of his work. So often research workers must wonder if their work was worth while, so few appeared to take notice of it, but here was an occasion when it was possible to honour a man of scientific repute. He also handed to Dr. Taylor a permanent token in the form of a medal, of the year in which he held the cup.

Dr. E. L. Taylor thanked the President very much, also the original donors of the Cup, the members of the Committee who decided to recommend that he should hold it during the current year and all the members present who had registered their agreement so readily. It was not an easy matter to express one's feelings on such an occasion, but he was very glad indeed to have this token of the recognition of his fellows that there was some value in the work which he had been doing. He was very sorry that his wife was unable to be present, and his three boys, first, second and third stage larvae. (Laughter.) Some members had been kind enough to take an interest in the first "thoroughbred veterinary surgeon" born to his wife some 17 years ago and he thought they might now be interested to know that he hoped to enter the Royal Veterinary College next year. (Hear, hear.)

Research was not a one-man affair at all, it always concerned a group of people, not only those with whom one actually worked, but also through literature and correspondence. Many researchers owed a lot to lay assistants and he had been extremely fortunate in that way; the research worker owed a lot to the man in the next laboratory and to the association of friends and people who took an interest in the work. Background education and background interest in research was of tremendous importance. Ideas came out of discussion with one's colleagues, with veterinary practitioners, with farmers and the wider the field, the further one could go, and the fresher one's ideas might be. Nor could anyone advance any branch of knowledge far ahead of anyone else; all were intimately linked and all moved together. He thought therefore that the more open research workers could be in conversations and the more ready to submit any point they had come across to discussion with their fellows in research, the more quickly did the work advance and it was on such occasions as the present, when one had the opportunity of meeting people in many fields, that assistance was forthcoming in the progress of research.

He was very glad to accept the cup as a token of his fellows' regard for his researches; he accepted it, however, not only for himself, but also for the many people who had assisted him in the little new work he had been able to do.

This concluded the Public Session and after visitors and guests had retired the business meeting took place.

The Business Meeting

Annual Report and Balance Sheet

The President said that the Annual Report and Balance Sheet had been approved by Council for presentation to the meeting, and after the Secretary had read the Auditor's Report, Dr. W. W. Wooldridge moved that the Report and Accounts be adopted.

Major D. S. Rabagliati seconded, and this was carried.

Election of Vice-Presidents and Other Officers

The President said that one of these elections was automatic; it was the election of himself as Senior Vice-President, as provided in the Articles.

The second recommendation was the recommendation of Council that Dr. R. F. Montgomerie be Junior Vice-President and President-Elect. He would move the acceptance of this recommendation from the chair. This was carried unanimously and with applause.

The President: The Council recommended that the following be elected officers of the Association:—

Hon. Treasurer: Mr. H. W. Bywater.
Hon. Secretary: Mr. G. N. Gould.
General Secretary: Mr. F. Knight.

He moved that these recommendations be accepted and this also was carried unanimously.

Dr. P. S. Watts proposed a vote of thanks to Mr. Wright, the retiring Honorary Secretary. Capt. J. R. Barker seconded. He said they should not pass over so readily the retirement of Mr. Wright. He had been Honorary Secretary through a difficult period and he would like the meeting to show their appreciation of the very good work he had done for the Association. The vote of thanks was accorded by applause and Mr. Wright said that he hoped this was not the severing of his activities with the Association, but he knew, probably better than anyone else, that he had not carried out the work involved in this post in the manner it should be, and he should like to take this opportunity of saying how pleased he was that Mr. Gould had been elected in his place. He knew that the work would be in very capable hands.

The President, on Mr. Knight's re-election as General Secretary, paid a warm tribute to his work. He said if it were not for Mr. Knight's work the "National" would be worth little. The Association hinged on him.

The Secretary, in acknowledging his re-appointment, assured members that it would be his constant endeavour to fulfil his duties to the best of his ability.

It was proposed by the President, and seconded by Mr. Bywater, that Messrs. Fairbairn, Wingfield and Wykes be re-elected Auditors for the ensuing year at an increased fee of 100 guineas. This was agreed to.

Public Relations Officer

The President intimated that a recent addition to the staff was a Public Relations Officer. A special committee met and appointed this gentleman about ten days ago. Unfortunately it was not possible to present him to the meeting. He was Mr. West, a member of the profession who qualified in 1933. He was in small-animal practice, but when the war came he gave up his practice and went into the Intelligence Corps, reaching the rank of Lieutenant-Colonel. He was sure when the members met him they would agree that they had a man who would be a great addition to the Association. He thought he would work well with the rest of the staff, and that was a very important point—a happy team was necessary in an Association such as this. When the members met him he thought they would agree the Committee was justified in feeling they had not made any mistake in this appointment.

Amendments to Articles of Association

The President: The alterations to the articles of Association had been thoroughly discussed by the Council, the advice of Board of Trade officials had also been taken and it was felt that there was no further need for discussion.

The last motion, that the name of the Association be changed to "The British Veterinary Association," was in abeyance.

Dr. Wooldridge said that Dr. Watts had made an excellent suggestion in the Council meeting that while the Articles were being changed the necessity to re-elect the General Secretary once a year might be altered to "at least once in three years."

The President said that consideration of this matter would have to be postponed for another year because no notice of motion had been given.

Capt. J. R. Barker asked if Dr. Watts and Dr. Wooldridge would be agreeable to the matter being referred to the General Purposes Committee and the officers of the Association. He said that the notice given now would be necessary on another occasion, so that

even if the meeting was favourable to the suggestion, due notice would have to be given on the Agenda of an Annual Meeting.

Capt. Barker then formally moved: "That Paragraph 9 on the Agenda, with the exception of the paragraph 'That the name of the Association be changed to The British Veterinary Association,' be adopted."

Mr. Steele-Bodger seconded.

Dr. Wooldridge asked if this meant that the question was to come up again next year.

Mr. Steele-Bodger said that it merely meant that it would not be considered this year.

The motion was carried.

Change of Name of the Association

Capt. J. R. Barker said that he was under the impression that the President intended that this should be put as a separate motion, so that no one should be deceived in such an important matter, and he would now propose: "That the name of the Association be changed to The British Veterinary Association."

Major Rabagliati seconded. He felt strongly about the matter and thought that it was high time that this matter was settled. It had been discussed for many years. The present name was very cumbersome and he greatly favoured the proposed change in the name.

Mr. Steele-Bodger moved: "That this matter be not considered this year" for the reasons given last year, and which were expounded and accepted at the last Annual General Meeting.

Mr. Ogilvie seconded.

The General Secretary read a letter received from the Lancashire Division, and the President said that he had received a letter from Eire. The Irish members there were in a very agitated frame of mind and he had a lot of sympathy with their point of view. They had just witnessed a procession to the platform of delegates from overseas, whom we had welcomed among us; they had hoped that Czechoslovakia, Russia and other countries behind the "iron curtain" might take their places also. Were they going to build iron curtains round this island? The peoples of the world were gradually coming together and they did not want to start any more disruption. The Association might make a kindly gesture by putting this matter off for another year or two. Perhaps by that time the situation would be cleared up.

Capt. Barker could not see how calling the Association the British Veterinary Association would be building an iron wall, because, surely, the British race stood for anything but iron walls. He did not see that there was any hope of passing it in two years more than there was to-day.

Mr. T. McNabb: He had the pleasure and privilege of attending St. Giles Cathedral on Sunday morning. The preacher on that occasion said the words "go forward" were a great inspiration to Christians and others, and he (Mr. McNabb) took it that they, there, belonged to one or other of those two classes. Most of them heard what their President, Professor Mitchell, said in his opening address to the Congress: he pointed out that their Association stood for progress and they were pleased with any advancement they made. He (the speaker) believed that by changing the name of the Association to the proposed new name, "The British Veterinary Association," they would be taking a step forward—they would be progressing. He was also a great believer in George Bernard Shaw's dictum—"Nothing stays put."

He (Mr. McNabb) belonged to Ireland, a country which was divided into two parts, North and South. Northern Ireland was really an attenuated form of Ulster known as "The Six Counties"; in it there dwelt a people who were British in outlook and who were determined through good and bad times, through peace and war, to preserve their British heritage, citizenship and institutions, and he had no doubt their members in the North of Ireland would welcome the new name—The British Veterinary Association. The North of Ireland had a Veterinary Association which was affiliated to that body. The people in the South of Ireland had an Association known as The Veterinary Association of *Ireland*; this name was misleading, it was really the Veterinary Association of *Eire* and he had no doubt that the members of that Association would also welcome the change of name. Eire was the only foreign country in the world in which one could obtain the diploma of membership of the Royal College of Veterinary Surgeons, the M.R.C.V.S.

By changing the name of the Association from the National Veterinary Medical Association to The British Veterinary Association they would be: (i) progressing; (ii) bringing their Association in line with their brethren in the medical profession; (iii) doing away with their present cumbersome name, and (iv) they would be uniting their members throughout the world under one name—The British Veterinary Association.

Mr. Bywater suggested that the letter from Mr. Howard of Eire should be read. The letter was not couched in terms which some might have wished, but an injustice would be done if the letter were not read, and it might lead to an accusation that the matter had not been freely ventilated.

Mr. Steele-Bodger said that Mr. Howard had sent him a copy of the letter and asked him if he would read such extracts as might be of use to the meeting. He would deem it a privilege if he might have that opportunity. Mr. Howard told him a few weeks ago in Ireland that he hoped to be present, and had in fact booked a room, but at the last moment he was unable to make the journey.

The General Secretary then read Mr. Howard's letter, as follows:—

Cushnahowna,
Ennis.
July 24th, 1947.

Dear Mr. Knight,

Please convey to the President and members my regret for being absent from this meeting more especially as I had hoped to be present for the discussion on the change of name of the Association. I will be obliged if you will read this letter to the meeting when that motion is reached as I want to refer to important facts.

This is not the first time that an attempt has been made to change the name. Sixteen years ago some malcontents introduced the proposition, and after many discussions it was referred to the Congress at Folkestone in 1932. I was present at that meeting and when I had explained the probable consequences, the members, like sensible men, rejected the proposal and matters have gone happily since.

Now, some people—I can't call them nit-wits for they have more brains and energy than they can make good use of, but I call them narrow-wits—have revived this bogy just for sheer cussedness and they give two reasons why they want the name changed.

First, they say the present title is too long and cumbersome. That may be so: if anyone ever used the full title, but there is not a person in this hall who has ever called the Association by any other name than the "National"—the name by which it has ever been known and by which it will ever be known.

The Association was founded for the purpose of consolidating the profession and to promote and protect the best interests of the profession. If that great man, William Hunting, one of the greatest lights that has ever adorned the veterinary profession, who fathered the Association during its successful growth to maturity; if he and the other great men associated with him were alive, this proposition would never appear on the agenda.

The second reason given is, that we should copy or imitate the medical profession.

Surely we are old enough to have our own code, and there is no analogy. The medical profession is a much larger body and the name of their Association was always the B.M.A. There is an Irish Medical Association quite independent. The medicals have many diploma granting and governing bodies. We have, and I hope will always have, one governing body, the R.C.V.S.

When our profession was granted its Charter of Incorporation over 100 years ago, it adopted as its motto the grand insignia, "*Vis unita fortior*," and never was there a time in the history of the profession when it was more necessary to live up to that motto.

There is no precise data to show how or when the name of Ireland was added to the title but it was evidently to secure the full co-operation of the profession in Ireland and the profession in Ireland have been staunch and loyal members of the Association and of the profession. Members from Ireland have filled with honour and dignity the highest post in the gift of this Association, that of President. Members from Ireland have provided papers for discussion at Congress meetings and have taken part in the discussions and deliberations of the Association and in their turn members from Ireland organized Congress meetings in Ireland: meetings, the brilliance and success of which have never been eclipsed, nor are likely to be eclipsed, and in the life of the profession members from Ireland have not been unmindful of their duty to the profession. They have acted with success for the past century on the Board of Examiners for the R.C.V.S. They have acted on the Council of the R.C.V.S. and have been responsible for many reforms. It was through the efforts of an Irishman on the Council that indiscriminate advertising was stopped. It was the efforts of an Irishman on the Council that put an end to the pernicious practice of members submitting by tender their services to corporations and other public bodies. It was the efforts of an Irishman that put an end to the using of additional fictitious letters by members of the profession and it was the efforts of an Irishman on the Council that won the admission of ladies to the ranks of the profession.

I have cited these matters to show that members in Ireland are entitled to consideration in reference to the question of the name. Now the members in Ireland cannot and must not accept the proposed change for many and grave reasons which most of you will well understand.

If the proposal is adopted, it means serving a Notice to Quit on us Irishmen and I am sure none of us wish to do that. We are anxious to continue the happy relations that have so long existed. If any man can adduce any reasonable argument to show that the Association will gain in prestige or usefulness or gain in any way, he might be listened to, but there is nothing to be gained and much may be lost by the proposed change. The name N.V.A. should satisfy even the narrow-wits and it allows every man in any part of the world who is a M.R.C.V.S. to be a member of the Association.

If you look over the pages of our own Journal you will see that in every other issue for years past, it refers to the Association as the National. Seldom does it print the title N.V.M.A. of Great Britain and Ireland. It would be a waste of good ink.

The proposal has been discussed *ad nauseam* and it was referred to the Congress at London last year. I was not able to be present but I sent a letter which was read and on consideration it was again referred to this Congress.

This is not a time for making mischief or causing disunity. Better live up to our grand motto *"Vis unita fortior."* I wish and hope that this meeting will not adopt the proposed change of name and that it will finally put this bogy to rest.

I wish your meeting every success.

Yours sincerely,

P. J. Howard.

Major Rabagliati asked how it was that this change had been incorporated in the suggested new Articles of Association if it had not been discussed by those who drew them up. Why should this part be the one to be cut out?

The President said that the principle had been accepted, but the decision as to when it would be brought into operation had been postponed.

Dr. Wooldridge supported the resolution to adopt the paragraph. They were all distressed at the way the Southern Irish and some other members were regarding this change of name. The last thing that had entered into anyone's mind on this side of the Irish Sea was that in changing the name they were excluding the Southern Irish. They were only supporting the change of name because the Association had grown so much that it was now on the way to achieving that for which the President had asked.

There were now affiliated to the National Veterinary Medical Association of Great Britain and Ireland several associations in Africa and the Middle East, and several of these Associations had asked through the Overseas Committee, that the name should be broadened so that they might feel that they were part of the family. He thought he was right in saying that the matter was referred to Divisions in this country and that the large majority had passed resolutions supporting the change of name. This was a democratic Association, and should be ruled by the decisions of the majority. He thought it should be made perfectly plain that the idea of the change of name was to enlarge the scope of the Association and certainly not to limit it.

Mr. C. Roberts: He had been a member of the Association for a long time, and he had known it longer than that because he had the records of some of its proceedings which were the possession of his father who was also a member. In those early days it had a name which was short and simple, and which stood it in good stead and answered its purpose during the early 'eighties and up to the end of the first world war. The name was changed about 1921 when the Association was reconstituted. It had had three names during its existence. The first one was the National Veterinary Association. The second was the same as now with the word "Ltd." attached. The last word was fortunately deleted but there was still this long title which wasted time and twisted the tongues of foreign delegates. If he remembered rightly, "National Veterinary Association" would satisfy Mr. Howard. The question which was important now was whether that title would satisfy the requirements of those who thought that the word "British" should be adopted. Would it be acceptable to Professor Browne and those members in Eire who objected to the new name suggested? If "British" was objectionable let them, in the interests of courtesy and friendship, not use it now or at any future time. He thought the original name might be used again and suggested that they revert to it.

The President: The principle had been passed, the decision was simply deferred.

Mr. Roberts suggested that they revert to the old name.

The President: Branches and Divisions voted as follows:—

In favour of the change—19.

Against—6 (including the S.V.P.).

Indifferent—2 (including the Scottish Branch).

No reply—3.

The voting was on a change of name to the British Veterinary Association.

Miss Hilda Bissett: As a Scot resident in Ireland for many years she deprecated any change whatever. It was a change for the worse. If the present resolution was carried she hoped that a future meeting would change it again.

Dr. Henderson: He had not realized that the meeting was likely to be discussing this question this afternoon and on enquiry from his near neighbours he found that they were in the same state of ignorance. He was sure that there were many members who did not realize that the question was to be discussed that afternoon and although he agreed that the name should be changed he would support Mr. Steele-Bodger in his motion that this be referred to the Annual General Meeting next year so that fuller publicity might be given to the fact that it was on the agenda.

Professor T. G. Browne (Dublin): As one who had been interested, all his professional life, in veterinary education he would like to state that it was most unfortunate that this contentious matter should arise at this juncture, since changes in veterinary education were pending which would involve negotiations between the British Government and the Government of Eire. He considered, therefore, that it was a great pity that any note of discord should arise at this critical time between the profession in the two countries. It had been suggested that they in Eire objected to the word "British" in the title, but that was not the case at all; it was simply the deletion, from the present title, of the word "Ireland" which was the question at issue. An alternative suggestion, of a somewhat neutral nature, had been put forward by Mr. Howard and others that the Association be called the "National" as it was popularly called at the present time. In view of this suggestion he would strongly recommend that this matter be postponed until this suggestion be given further consideration.

If a change were made he would like to point out that several complications would arise as a consequence. For example, only a few moments ago they had presented a cup and a medal to Dr. Taylor bearing the present name of the Association, so that this cup and medal would be rendered obsolete by the proposed change. That was only one example of the unforeseen complications which would arise as a result of a change in title.

Another matter which had been raised by a previous speaker, but which was rather beside the point of this discussion, was the name of the Veterinary Medical Association *of Ireland*. There appeared to be some misunderstanding regarding the position of the Veterinary Medical Association of Ireland, so that he felt he must explain the matter now that the question had arisen. That Association was almost 60 years old and had been in existence long before the "Border" or any other Association in Ireland came into being. Its membership had always been open to the profession in the whole of Ireland and still was, so that the Association was obviously entitled to use the name under which it was founded.

Coming back to the main question of the discussion, he would support the proposal that this matter be deferred, particularly in view of the pending changes in veterinary education and in view of the suggested amendment to the proposed new title.

The President: This suggestion had been considered frequently and it was determined by an annual meeting that the name was to be British Veterinary Association and all that was deferred was the date at which it should come into being. This further suggestion had been made very late in the day.

Mr. P. Harnett (Dublin): There seemed to be an innuendo going through the meeting that the Irish members wished to cut themselves apart, that there was some sinister political move at the back of all this on the part of the Veterinary Medical Association of Ireland alleged to have a very grave objection to the word "British." As a member of the V.M.A.I. and of its Council he could assure the meeting that the Irish members of the "National" were amongst its most loyal supporters. The Irish members could not get over the fact that certain political changes had taken place in the relationship between their country and Great Britain. His Association had no control over the changes which now existed and it was possible, due to these changes, that some of his fellow members, now members of the "National," could not continue to be members of it, if it were decided to change its name to the British Veterinary Association. He was most anxious lest the change in name of the Association should bring about the isolation

of the Irish members. His Association did not want this to happen: they wanted to be part and parcel of the main body.

He was in sympathy with those who, for what they believed were good reasons, wished to change the name, but it should be a national change. In fact, if the meeting should decide to change the name, he and very many of his colleagues would accept the decision without reserve. By force of numbers those present had the power to out-vote the Irish members but if they should do so his Association was in danger of being cut off. If this should happen it might cause serious trouble among those who wished to remain in the Association, whereas he firmly believed the new name could not add one whit to the prestige which the "National" now enjoyed nor would it put one extra pound into the pockets of its members.

Professor Browne had pointed out the delicate situation in regard to education. At present there was one definite uniting factor, namely, the Royal College of Veterinary Surgeons. What would happen to that body in the future he did not know; he was apprehensive lest that cohesive factor should cease to exist due to changes in the system of education now envisaged. Therefore he was most anxious that the other cohesive factor, namely, a united Association, the fate of which was entirely in the hands of its members, should remain and he asked that the amendment should be passed.

Capt. J. R. Barker: Was the amendment a direct negative?

The President replied in the affirmative.

Mr. Barker: He wished to speak to it.

Mr. Steele-Bodger: Little could be added to the eloquent remarks of the last speaker. He would only say that two or three months ago he had the privilege of addressing the Veterinary Medical Association of Ireland. There were some hundred members and students present at that meeting and he was charged by them to use his every endeavour not to have this implemented at this present time. It had been suggested that there was disloyalty but there was no more loyal Division of the Association than the Veterinary Medical Association of Ireland. They had no control over their Government and it would be putting them in an embarrassing situation. Last year the Annual General Meeting decided in view of the factors then prevailing to postpone the implementation of this resolution, and these factors still obtained. There was nothing concrete to gain by this change at this juncture. There was enough strife in the world to-day; why hurt anybody if it could be avoided, particularly when it would not do the majority any good? He would plead with the members to pass the amendment because the factors which guided the meeting to postpone the matter last year obtained to-day in no less degree.

Mr. Howard was over 80 years of age; there had never been a more loyal member of the Association. Those who were old enough could remember the dignity which he brought to the Association and the pleasure it gave him when he was elected a Vice-President. It was a cruel blow to him that he could not be present that day.

Capt. Barker: He did not know whether he should speak now or when the amendment became the substantive motion. Might he plead to their heads and hearts and beg that they would not let one run away with the other. The Association had been considering this question for a very long time.

Mr. Steele-Bodger's amendment that the paragraph be deferred for another year was carried by 55 votes against 27.

Dr. Wooldridge moved as an amendment to the substantive motion "That the name of the Association be changed to the British Veterinary Association in the year 1950." He did so because this discussion had been a running sore at every Annual General Meeting for so long. He thought they could rest assured that by the time 1950 came round they could be certain of the change being made amicably. It was high time the matter was disposed of.

Mr. Steele-Bodger said that he would second this amendment if Dr. Wooldridge would agree to its being reconsidered in 1950.

Dr. Wooldridge said that Mr. Steele-Bodger had forgotten that the decision that the name be changed had been made. He wanted the discussion as to what date it should be changed deferred until 1950.

The President said that they could not determine what their successors should do.

Dr. Wooldridge said that it would be the decision made that day which did not come into effect until 1950 and there would be no further discussion unless someone moved a change of name again. He thought it was better to get this right off the plate of the Association and he could not help feeling that it would be better to make a firm decision that day. Far more harm was being caused by repeated discussion than would be by coming to a firm decision. The whole object of the change was to strengthen and widen the Association.

Dr. Watts seconded Dr. Wooldridge's proposal.

Mr. Steele-Bodger said that he would have to move an amendment.

Professor Browne asked at which annual meeting it was decided to change the name of the Association.

The General Secretary read the appropriate minutes of the Annual General Meeting, 1945.

The President said that an instruction had been received from the solicitor which had been overlooked, which he read.

Mr. Steele-Bodger said that Dr. Wooldridge and he had agreed upon the wording of a resolution which Dr. Wooldridge was prepared to move.

Dr. Wooldridge proposed the following to be regarded as an amendment or a resolution, whichever the President thought fit:—

"That the change of the name of the Association to the British Veterinary Association be not made until the year 1952."

Mr. Steele-Bodger seconded.

Major Rabagliati asked if this meant that the name would be changed in 1952.

Mr. Steele-Bodger: "No, sir."

Dr. Watts said that he seconded the original motion that the name of this Association (which had already been changed in essence but the date of which had not been determined) be changed in 1950, and that was a definite date of change which could not be altered except after 1952.

Dr. Wooldridge thought the position was clear. Mr. Steele-Bodger and he had decided on the wording of the resolution. Mr. Steele-Bodger had interpreted it differently from himself, but Mr. Steele-Bodger was seconding the resolution which must be interpreted in the light of the proposer's explanation. His interpretation was that the change of name took place automatically in 1952 and he had suggested that in order to enable their Irish friends in the meantime to get over their troubles.

Dr. Watts said that he would withdraw his seconding of 1950 provided the interpretation was as Dr. Wooldridge set out.

The President said they would have to make their own interpretation. It was quite definite now that they had only one motion.

Mr. T. L. Wright wanted to suggest the alteration of one word. It seemed to him that there was a desire to stop the recurrent annual long discussion over this matter of the change of name. It had been proposed now that it should be deferred until 1952, and if it was altered to read "before 1952" instead of "until 1952" it would meet all objections.

Dr. Wooldridge said that the word proposed was "until" which meant that it should be changed in 1952.

Mr. Steele-Bodger said that his interpretation was 1952.

The President asked the Secretary to read the proposition, which he did.

Dr. Watts proposed as an amendment "That it be changed in 1952."

Major Rabagliati seconded. Dr. Wooldridge had said that it would be changed but the resolution did not say that.

The amendment as follows was put to the meeting:—

"That the name of the Association be changed in 1952 to the British Veterinary Association."

Before the vote could be taken, Dr. Wooldridge pointed out that he must vote for the amendment because it was his interpretation of the resolution.

Mr. Alexander Thomson (Glasgow) said that it had already been decided to change the name.

Mr. Anderson said that he took it that Dr. Wooldridge's amendment was to the amendment which had become the substantive motion, that was, that the matter should be deferred for one year, in which case he thought that Dr. Watt's amendment was out of order. He did not wish to influence the meeting as to the question of a change of name but it seemed somewhat superfluous to put forward an amendment that the matter be deferred for five years—an ambiguous amendment which they said they were putting in order to prevent the annual bickering. It was being put in such a way that the annual bickering would start all over again in five years' time. This was a frivolous amendment, and if it was defeated he would be prepared to second the other one which Dr. Watts would then put, not that he had any strong views in the matter but they must come to a clear-cut decision.

Capt. Barker: The substantive motion had never been put.

Mr. Steele-Bodger said that the amendment already passed stood as the substantive motion. The chair might accept one amendment on it.

A Member: On a point of order, could Mr. Steele-Bodger second an amendment to his own motion?

The President expressed agreement with Mr. Anderson's suggestion that the original amendment had become the substantive motion. He must therefore put Dr. Wooldridge's amendment first. Should this be lost, Dr. Watts could propose another one. He would put the amendment to the meeting.

The amendment was lost.

Dr. Watts: Could he now propose: "That the name of the Association be changed to the British Veterinary Association in the year 1952."

The President intimated assent.

Mr. A. Thomson (Glasgow) seconded, and this was carried.

It was then put as the substantive motion and carried.

Mr. Steele-Bodger gave notice of motion that he should raise the matter in 1951.

Affiliations

The President moved from the chair that the Council's approval of applications for affiliation to the Association from the following be confirmed and this was agreed to: British Caribbean Veterinary Association; Sudan Veterinary Association.

Matters Referred from Council

The Secretary said that a matter arose at the Council meeting held on June 20th last. Permission was sought for the adoption of the following By-law No. 3, Honorary Members and Associates: "The rights and privileges of Honorary Members and Associates drawn from outside the ordinary members of the Association shall be those rights and privileges defined or implied as attaching to ordinary membership except that none shall have the right to vote at the ordinary general meetings of the Association." It was necessary to get the confirmation of the Annual General Meeting to that By-law.

The President moved, Mr. Gould seconded, and this was agreed to.

Other Matters

Mr. H. C. Swann (King's Lynn): As an Association they were unanimous in what the Council had done with regard to salaries for full-time officers of the Ministry and he would put a resolution from the Annual General Meeting in the following words:—

> "That this Annual General Meeting of the National Veterinary Medical Association expresses its keen disappointment at the attitude of the Minister of Agriculture towards the status and salaries of the veterinary officers of his Ministry. It wishes to reaffirm the decision of its Council that, in the interests of agriculture and improvement of livestock, the Association cannot help but continue to resist his present policy in this matter."

Mr. A. J. Wright seconded, and this was carried unanimously.

Dr. Watts agreed that his point with regard to the annual re-appointment of the Secretary should be referred to the Finance and General Purposes Committee.

Mr. Steele-Bodger moved a vote of thanks to the Chairman which was accorded by applause, and the business part of the proceedings was concluded. The meeting was then adjourned until Friday, August 1st.

THE SHEEP DECLINE

For the first time we now have a clear picture, in so far as official returns can convey, of the extent of the losses in the United Kingdom sheep population as a consequence of the winter's havoc among flocks.

The June 4th returns, which are only provisional, indicate that the total decline in U.K. sheep stocks as against the same period a year ago was about three and a half million head—a figure which is equal to more than one-half of Scotland's total sheep stocks.

Here are the figures as extracted from the June 4th provisional returns:—

	1947	1946
England and Wales ...	10,177,000	12,764,000
Scotland	6,164,000	6,953,914
Northern Ireland ...	531,700	639,795
	16,872,700	20,357,709

It will be seen that, whereas the reduction in Scottish stocks amounts to less than 800,000 head, the decline in England and Wales amounts to nearly 2,600,000.

These figures confirm reports received at the time of the heavy losses which occurred in North Wales and in the North of England. —*Farming News.*

Laurence Guy Anderson, B.V.Sc. (Toronto), M.R.C.V.S.

President of the National Veterinary Medical Association, 1947-48

At one of the most critical times in the history of the profession the National Veterinary Medical Association has elevated to the important position of President one who has youth tempered with wide experience.

Laurence Guy Anderson was born in London on December 20th, 1909, and thus becomes President of the Association when only 38 years of age. Until comparatively recently our presidents were much older men and this is the first time the presidency has gone to one below the age of 40. In this time of action this is an encouraging fact and augurs well for our future progress.

Guy Anderson went to the Haberdashers' School, London, whence he gained his London Matriculation in 1927. Having a leaning towards agriculture he attended a short course at Reading University in 1928-29. This course stimulated his interest in farming and he decided to gain further experience abroad; accordingly, he emigrated in 1929 to Canada where he farmed for three years. His experience with cattle made him wish to become a veterinarian, therefore he entered Ontario Veterinary College and graduated in veterinary science in the University of Toronto. During his student days he entered fully into the social life of the College: he was an enthusiastic member of the dramatic society and a keen swimmer and diver; he was also chosen to play rugby for the Dominion Championship Team. As one of his professors, visiting this country, observed: "Anderson is well remembered as a boisterous student, bubbling over with enthusiasm and energy." From Toronto he came to England and was permitted to sit the final M.R.C.V.S. examination, qualifying from the London College in July, 1936.

After graduation, Guy Anderson went into veterinary practice, acting as an assistant for the first 15 months. In August, 1937, he took over his present practice at Aylesbury. He soon decided this was too lonely an adventure and married Joan Pollard in September. The solitary nature of the early days in practice has since been completely dissipated, for it has grown to include three qualified partners and at least one other veterinary surgeon. The home circle has increased and there are now three children. He has been a keen Scout for many years and is now in charge of a whole region for the Boy Scout Association. Moreover, his enthusiasm and efficiency as a Scout reach beyond the glamour of the camp fire and his masterly handling of such a dull but disastrous crisis as an electricity failure when the dinner is cooking makes him a welcome visitor to any kitchen. Indeed, as many experienced last winter, give Anderson a few simple ingredients, a saucepan, a hot brick and a garden, and an appetizing meal is soon served.

Fairly recently they have moved to an attractive home—The Old Manor, Marsworth—away from the practice and he is fast becoming the village squire and a pillar of the church. The gay charm of his wife and their host's gifts as a raconteur assure a happy, carefree evening for those friends fortunate enough to visit them there.

Within the Association L. G. Anderson has been active, firstly in the Royal Counties Division—of which he has been President—and since 1942 as a member of Council, N.V.M.A. He has served on various committees, particularly the Editorial and the Organizing Committees. He was Chairman of the Editorial Committee from 1943 to 1945 and Chairman of the Organizing Committee from 1945 to 1947. In this latter capacity he has had much to do with the relationships between animal welfare societies and the profession. He has been a member of the Finance and General Purposes Committee since 1943.

Few of those who heard his remarks on being inducted into the presidency at Edinburgh will doubt that in Anderson the Association has a gifted leader who is anxious to see the profession's dispute with the Ministry of Agriculture brought to a satisfactory conclusion. As an experienced Scout he believes in being prepared for all eventualities but as a keen practising veterinarian he has a burning desire to see the profession given the opportunity for pulling its full weight in assisting the farmers in their immediate heavy task. His directness, clear mind, sincerity, attractive personality, humour and determination should materially assist in achieving this result. Members of the Association and readers of the *Record* will wish him well.

[*Photo: E. R. Yerbury & Son, Edinburgh.*

L. GUY ANDERSON, B.V.SC., M.R.C.V.S.

President of the National Veterinary Medical Association of Great Britain and Ireland, 1947-48.

Surgical and Other Demonstrations

The Surgical Demonstrations were carried out in the large-animal operating theatre of the College by Professor J. G. Wright of Liverpool, assisted by Mr. J. W. Burgess and other members of the department of surgery at the Dick College.

Operation for Relief of Scrotal Hernia in Colt Presented for Castration

The first subject was a Clydesdale colt affected by left-sided scrotal hernia which was presented for castration. The animal had been prepared for operation by withholding food for 24 hours. It was led on to the straw bed and after the application of a twitch, the girth and backstrap of the Danish hobbles were fitted.

Narcosis.—Chloral hydrate by intravenous injection was administered in the standing position. An area of skin, about three inches square over the jugular furrow and about half way down the neck, was shaved and cleansed and an insensitive skin weal developed by the injection of 3 c.c. of "Parsetic" (a 2·25 per cent. solution of procaine hydrochloride with adrenaline) using a fine hypodermic needle. After an appropriate pause, the intravenous needle (12 gauge, 6 cm. long) was thrust through the desensitized weal in the direction of the head and into the distended vein. The operator raised the vein by pressure of his left thumb about two inches below the site of insertion of the needle. After entering the vein the needle was pushed up its lumen a further inch or so. The necessity for this precaution was stressed to ensure that with collapse of the vein on removal of the pressure beneath, the vein was not drawn off the point of the needle—a frequent cause of mishap. The injection was made by gravity using a litre flask fitted with glass inlet and outlet tubes. Four feet of rubber tubing connected the outlet tube with the needle adaptor and inserted in the tubing about two inches from the adaptor was a short glass-tube "window." As soon as injection was commenced a check was made that the needle still occupied the vein. The assistant, who was holding the inverted flask above his head, lowered it while the operator applied pressure to the vein beneath the needle. Blood immediately flooded the window. The flask was again raised and injection continued. Throughout injection the operator held the needle at the adaptor and applied gentle pressure to the neck. His object in so doing was that should the horse move there would be no tendency for the needle to be dragged from the vein. Injection occupied between two and three minutes during which period the animal remained still. On completion the apparatus was detached from the needle and after a little blood had flowed through the latter, thus clearing its lumen of chloral solution, it was withdrawn.

The colt remained standing for about half a minute after completion of the injection when it staggered and sank quietly to the ground. The necessary restraint was then applied; the fore and hind limbs were flexed and secured to the "D" pieces of the backstrap, the animal placed on its back and supported. At this point, some five minutes or so after completion of the injection, it was estimated, judging by relaxation of the tail, penis and anal sphincter, that light anaesthesia was present.

Dosage.—The colt's weight was estimated at 9 cwt. and a unit dosage of chloral of 6 grammes per cwt. was used:—

Chloral hydrate	...	...	...	54 grammes.
Sodium chloride	...	...	...	5·4 „
Sodium citrate	...	...	...	5·4 „
Tap water	...	...	...	540 c.c.

Placed in a litre flask and sterilized by boiling. The injection was made with the solution at approximately blood-heat.

Operation. With the animal restrained on its back, the hernia had become reduced spontaneously. The operation site and the skin of the thighs and buttocks were prepared by washing with soap and hot dettol-water and subsequently treated with mercury biniodide-alchohol solution. The interior of the prepuce was not interfered with, the operator expressing the view that attempts to remove smegma were generally a long and unsatisfactory procedure. Moreover, he did not regard it as highly infective material. Nevertheless, to prevent contamination of the site a piece of sterilized rubber sheeting was clipped immediately in front of the scrotum. The area around the site, including the animal's hocks, was similarly covered by sterile rubber sheeting. The advisability of applying these sheets loosely so that they would not be torn away should the animal move suddenly, was stressed. Instruments and swabs taken from the sterilizers were placed on a tray which had previously been covered with sterile rubber sheeting. Points made in favour of this practice over the direct use of instruments from the sterilizer were that there was a greater area on which to lay them out, they were more easily seen and selected and were less likely to be damaged. In addition, by using a piece of sheeting larger than the tray they could be covered during pauses in operation.

The lines of skin incision were infiltrated with parsetic by the progressive introduction of an 8 cm., 19 gauge needle along the scrotal connective tissue. About 10 c.c. were used on each side. After a pause, the needle was thrust through the testicle and into the cord where a further 5 c.c. were injected.

Dealing with the left side first, the skin of the scrotum was tensed over the testicle and an incision made from the anterior to the posterior pole. Incision was made progressively through skin, *tunica dartos* and scrotal fascia down to the parietal peritoneum. It was pointed out that the appropriate depth was readily ascertained by the degree of separation of the lips of the wound and the readiness with which separation occurred when the peritoneum was reached. At the same time it was stressed that blunt dissection should not be commenced until all the connective tissue layers over the *tunica vaginalis communis* had been incised, for otherwise dissection tended to be along the abdominal floor rather than downwards, towards the inguinal ring and also the large and tortuous veins of the area were likely to become involved in the dissection.

By blunt dissection the vaginal sac containing the testicle and cord was separated from its surrounding connective tissue down to the ring. During this dissection slight movement by the animal occurred and so an inhalation mask was applied and 1 oz. of chloroform allowing free air administered. There was no further movement during operation. At the ring, a ligature using two strands of No. 4, 20-day chromic catgut was applied around the sac and its enclosed spermatic cord. To prevent possible slipping of the ligature it was insinuated beneath the external cremaster muscle. Attention was drawn to the necessity of applying the ligature immediately beneath the abdominal ring for in this way the hernial sac was completely obliterated. If any of the sac remained, and this was almost inevitable when using the clam method owing to the necessity for placing the appliance outside the skin, there was a risk of the hernia recurring. Moreover, it was the complete obliteration of the sac which made the simple method of catgut ligature safe. If any measure of hernia were present above the ligature there was the risk that any sudden increase of abdominal pressure might cause a breakdown. As a safeguard, a second ligature was placed half an inch distal to the first. The vaginal sac was then opened and after applying a single catgut ligature to the spermatic vessels, the testicle and the remains of the sac were removed about an inch beneath the ventral ligature using an emasculator.

From the point of applying the ligature to the neck of the sac, the divided tissues were progressively dusted with sulphathiazole, care being taken that the antiseptic agent came everywhere into contact with the cut and torn surfaces. The scrotum was finally closed by suture after the insertion of a single, centrally placed drainage tube. In reply to questioning, the operator stated that it was his practice to suture the skin in cases of scrotal hernia in order to minimize the risks should prolapse occur, and the object of the drain was to allow any blood which might collect in the scrotum and thus serve as a medium for bacterial multiplication, to escape. It was the intention to remove the sutures and tubes 48 hours later. The right side was similarly dealt with. Finally a prophylactic injection of anti-tetanus serum was given.

The animal rose to its feet about one hour after the injection of chloral but went down again. It finally attained its feet and walked to the loose-box where it immediately commenced to feed, half an hour later.

Post-operative Course.—Mr. Burgess has appended the following comments on the post-operative course of the case:—

There is very little to make comment on as far as the post-operative course of the case is concerned.

For the first few days the appetite was rather poor, but by the end of the week he was taking all food offered.

The sutures with the drainage tubes were removed on the morning of the third day after the operation. The wounds were perfectly clean and remained so. There was no swelling. No dressing of the wounds was done, except for the application of Harrington's solution before removal of the skin sutures. There was no swelling or sign of reaction of any kind at the part at which the chloral hydrate solution was injected into the jugular vein.

The animal was discharged on Thursday, August 14th, in good condition.

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Subsequently Professor Wright demonstrated the sites for carrying out epidural, paravertebral and horn-core anaesthetic block in the bovine.

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Pulmonary Emphysema: Post-mortem Examination

This examination was conducted in the large-animal operating theatre by Professor D. C. Matheson, of the "Dick" College.

The findings were as follows:—

Discharge of a white frothy material, "like white of egg" (Samuel Drinkwater's—1796—clinical sign of broken wind).

The right lung showed marked emphysema of both apical lobes and of the lower border, and a similar condition was present in the left lung which, in addition, showed some effects of hypostasis and a chronic localized pleurisy, which extended to the parietal pleura.

The cranial surface of the diaphragm showed a few patches of chronic pleurisy.

Some sub-endocardial haemorrhages were present, probably associated with the effects of shooting the animal.

The abdominal cavity contained about 100 ml. of clear fluid.

The liver showed patchy thickening of the capsule and threads of fibrous tissue.

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DEMONSTRATIONS

An interesting and much appreciated feature of Congress was a series of demonstrations of specimens, diagnostic processes, etc., admirably displayed in the various College departments, the information thus made available being supplemented verbally by the various demonstrators at specified times.

Following is an account of these demonstrations.

Clinical Department

This demonstration was held in the Clinical Laboratory. Several specimens of surgical interest were shown, and included a spondylitis affecting the seventh cervical and first and second thoracic vertebrae, a specimen showing multiple fracture of the shoulder joint, a tumour of the nasal cavity, and periosteal abscess and osteomyelitis of the radius. The foregoing specimens were from horses. In each case a history was given together with photographs.

A series of microscopic slides showing degenerate nerve tissue from horses affected with osteo-arthritis was shown.

Lateral canthotomy for the treatment of entropion in the dog was shown in various stages on preserved specimens, as was also evisceration of the orbit in the same animal.

There were also demonstrations on preserved specimens of double loop suturing as used in closing the abdominal wall, the use of the oesophagoscope, and ovariotomy *via* the flank in the bitch.

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Physiology Department

The demonstrations for which this Department was responsible showed the following:—

1. Methods of collecting, preserving and transporting samples of blood and urine for biochemical analysis.
2. The determination of serum calcium.
3. The properties of muscle, nerve and heart.
4. Respiration and metabolism in the dog.
5. Electrocardiogram of the horse.
6. Perfusion of isolated intestine of horse and movements of caecum and colon in a horse with caecal fistula.

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Department of Bacteriology

The bacteriological demonstration was in two parts; the first dealt with the penicillin sensitivity of various bacteria, and showed cultures of *Penicillium notatum* grown on solid and liquid media together with a brief description of the method of assay of the finished product. Various methods of comparing the sensitivity of different species and strains of bacteria were demonstrated, including the broth dilution method, the cup or cylinder plate method and the filter paper strip method. Specimens of sensitive and insensitive organisms were exhibited under test by each of these methods.

The remainder of the demonstration was designed to be of particular interest to practitioners and showed methods of diagnosing Johne's disease by microscopical examination of faeces, and of the diagnosis of mastitis by means of Newman's stain. Representative smears of milk from cases of streptococcal, staphylococcal and corynebacterial mastitis as well as normal milk were exhibited.

Anatomy Department

Following is a précis of the demonstration in the Anatomy Department.

Corrosive Technique

This method is most promising in showing the course, branching, etc., of hollow tubes. The organs used in this demonstration were the kidneys of a large variety of animals. The arteries, veins and ureters were injected and very exact casts of these structures were produced. It was observed that the blood vascular system was similar in most of the mammals examined; the contrast in the structure of the ureters was of interest and value to the comparative anatomist.

Alizarin Method

This is a simple method of showing the development of bone in the embryo. It has some advantages over other methods as the entire bony skeleton may be stained in various stages of formation, giving a splendid picture which is easily studied. The series of specimens shown depicted how quickly bone may be formed in both pre-natal and post-natal life.

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Department of Hygiene

Hormonal Tests for Equine Pregnancy

Three tests were demonstrated: (1) a blood test, (2) a biological urine test and (3) a chemical urine test (Cuboni test).

The type of samples required, the nature of the tests, the apparatus and test animals used, and the steps taken in carrying out the various tests were indicated.

For the blood test 20 c.c. of blood, collected between 45 and 90 days after service, should be sent to the laboratory; the serum is injected into immature female mice. A positive reaction is indicated by enlargement and congestion of uterus and ovaries.

To carry out the urine tests about 120 c.c. urine collected any time from 90 days after service, should be sent to the laboratory. For the biological urine test detoxicated diluted urine is injected into ovariectomized mice. A positive reaction is indicated by the presence of characteristic cornified epithelial cells in vaginal smears. The Cuboni test is carried out by extracting hydrolized urine with benzene and then mixing the benzene with concentrated sulphuric acid. The sulphuric acid is then separated from the benzene and heated to 80° C. for five minutes. A positive reaction is indicated by a green fluorescence in the sulphuric acid.

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Parasitic Helminths of Sheep

This demonstration by Dr. D. O. Morgan, University of Edinburgh and Royal (Dick) Veterinary College, showed:—

1. The various helminths found in sheep.
2. Stages in the life-cycle of the tapeworm *Moniezia*.

The life-cycle of these tapeworms involves the development of the cysticercoid stage in free-living mites. Although several species of mites can be infected experimentally only the species *Scutovertex minutus* has been found so far in Scotland to carry a natural infection.

3. Graph showing the sharp spring increase in egg output of helminths in sheep.

Studies on the helminths in hill sheep in Scotland have shown that the egg output of helminths rises rapidly in spring and early summer, followed by a gradual fall to a minimum output about December and January. The spring rise is seen in all ages of sheep although it reaches its highest level in hogs and young ewes.

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Fluorosis Specimens

This demonstration (Professor G. F. Boddie, Royal (Dick) Veterinary College) showed the dental lesions of chronic endemic dental fluorosis in cattle and sheep. The specimens of sheep skulls were dry and those of bovine skulls were wet formalin specimens.

The various lesions of dental fluorosis referred to in the paper on Toxicological Problems in Veterinary Practice, were clearly seen in this demonstration.

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Some Uncommon Parasites

"Some Uncommon Parasites" (exhibited by Dr. J. N. Oldham of the Research Institute in Animal Pathology, Royal Veterinary College), included (*a*) a histological section of a kidney from a gosling which had died from renal coccidiosis due to *Eimeria truncata*, the most important coccidium occurring in geese. The disease which this parasite causes is usually severe, affecting young

birds from three weeks to three months old, and is characterized by rapid deaths, within two to three days after symptoms are first seen, in 80 to 100 per cent. of cases. The developmental stages of the parasite occur in the walls of the uriniferous tubules and there is extensive destruction of the tubular epithelium. Affected kidneys show yellowish-white striations or pin-head sized spots under the capsule. (*b*) *Oslerus osleri* which is sometimes found in the dog's trachea where it produces pea-like nodules below the mucosa, usually at the bifurcation of the trachea. A specimen of an affected trachea, a histological section of a nodule and some worms recovered from a nodule were exhibited. Young dogs are chiefly affected and the disease is chronic and not usually fatal, a persistent cough being the most marked symptom. (c) *Cheyletiella parasitivorax*, a mite not infrequently reported from rabbits' fur where it preys upon the minute pilicolous acari which inhabit the hairs of the rabbit. The mounted specimen and a drawing showed that this mite can readily be distinguished from the common mange mites. It occurs rarely on cats and a few cases have been reported in which skin affections in humans have apparently resulted from handling or nursing cats. The skin eruptions were confined to those parts of the body which had been in contact with the cat, *e.g.*, arms, chest, upper surface of the legs.

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Bovine Pyelonephritis and Corynebacterium renale

(R. Lovell and E. Cotchin, Research Institute in Animal Pathology)

In order to illustrate the diagnosis of bovine pyelonephritis, a smear of urinary deposit and milk-agar plate cultures were shown; the colonies of the specific organisms were surrounded by "haloes" due to clearing of the medium—a feature which is used to facilitate cultural examination of suspected urine.

The macroscopic and microscopic features of the bladder lesions from a case of "chronic haematuria" were also illustrated; this disease has to be considered in the differential diagnosis of bovine pyelonephritis.

An account was given of the disputed pathogenesis of pyelonephritis. The observation that the intravenous injection of *C. renale* in mice was followed by localization in the renal medulla whilst the renal cortex was unfavourable, was discussed in this connection, and the lesions in the mouse kidney were illustrated macroscopically and in photomicrographs.

The reports from America of the use of penicillin in the treatment of bovine pyelonephritis were mentioned in connection with trials in mice in which pyelonephritis due to *C. renale* had been produced experimentally. The latter trials indicated that the drug is likely to be of value only in the earlier stages of the disease, before much damage has occurred in the kidney.

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Some Diseases of Poultry

The exhibit (Mr. J. E. Wilson, Ministry of Agriculture and Fisheries, Eskgrove, Lasswade) was designed primarily to illustrate the outstanding *post-mortem* features of several of the commoner diseases of poultry including fowl paralysis, leukaemia, osteopetrosis, bacillary white diarrhoea, salmonellosis, aspergillosis, tuberculosis, fowl pox, coccidiosis, blackhead, and some abnormal heart and bone conditions. Dr. Wilson supplied the following notes concerning his exhibit:—

Fowl Paralysis.—The great diversity of the lesions of this disease can be seen from the specimens and photographs. In one individual case it will be noted that there are tumours of the skin, ovary, and liver and kidneys, and that the vagi, splanchnic and left brachial plexus are affected. In another it will be noted that the enlargement of the sciatic nerve is unilateral, while another specimen shows bilateral enlargement. The enlargement may be uniform throughout the course of the nerve, or tumour-like outgrowths of the thickened nerve may be present. Lesions may be confined to the proximal portion of the nerve, or to the distal part only. Sometimes the enlargement is confined to a single nerve root enclosed within the kidney tissue. A diseased brachial plexus will be noted where the nerve has reached a diameter twice as great as the spinal cord. Another specimen shows a vagus nerve increased to the thickness of a pencil and a branch of the splanchnic nerve increased to approximately the circumference of the intestine. Tumours at various stages of development are also shown ranging from a small "pea" in the liver to a massive tumour of the ovary.

Leukaemia.—In this country there has been a tendency to consider fowl paralysis and the leukaemias, at least erythro and myeloid leukaemia (in my opinion lymphatic leukaemia cannot logically be differentiated from neurolymphomatosis), as separate entities, whereas American workers have included all under the general heading of the leucosis complex. Photographs show the gigantic size which the affected liver may attain, sometimes almost completely filling the abdominal cavity, and a spleen will be noted which has reached the size of an orange.

Osteopetrosis.—This disease is considered by some American workers to be a manifestation of fowl paralysis. If this view is correct then it is certain that neurolymphomatosis was present in this country long before 1929 when it was first reported, as cases of osteopetrosis have been known since 1915 if not earlier. The disease, however, is uncommon. The bones of the limbs are chiefly affected, the enlargement being most obvious in the shanks. The vertebrae, ribs and sternum are rarely affected, and the skull and phalanges never. The comparative weights of diseased and healthy bones may be of interest:—

	Healthy.	*Diseased.*
Femur	7·3 grammes.	26·2 grammes.
Tibia and Fibula ...	10 „	49 „
Shanks	17·7 „	33·9 „
Humerus	3·7 „	24·5 „
Radius	0·9 „	7·8 „
Ulna	2·5 „	16·8 „
Skull and Mandible ...	22·2 „	16·2 „
Sternum	11·5 „	8·3 „
Cervical vertebrae ...	11·1 „	10·8 „
Thoracic vertebrae, sacrum and pelvis	32·8 „	28·5 „

Another interesting bony malformation is demonstrated, namely, a peculiar twisting of the tibia which is laterally flattened. It appears to be an inherited characteristic. The remainder of the skeleton is normal.

Abnormal Heart Conditions

Round Heart Disease (*Sometimes Called Toxic Heart*).—This disease has been described in New Zealand, Northern Ireland and more recently in England. Outbreaks have occurred in two flocks in Scotland. In one, it has been present for many years, probably representing the earliest cases recorded.

The heart condition appears to be typical of that described elsewhere with certain differences and we consider that it represents an anatomical abnormality present probably from time of hatching. We prefer for the moment the term "Round Heart Disease" to "Toxic Heart," unless definite evidence of toxicity is forthcoming.

Birds are usually in good condition when they die most commonly during or just after feeding without having shown symptoms of illness prior to the fatal attack.

In our outbreaks there has been no tendency for the disease to spread even to neighbouring pens.

There is a well marked seasonal incidence, most cases occurring in the period February to April.

Included in the specimens is a heart of a chick a few weeks old which weighed 7·3 grammes compared to a healthy heart from a bird of the same age which weighs 1·5 grammes.

The peculiar blunt apex of the left ventricle, often invaginated and with a peculiar whorl-like arrangement of the muscle fibres will be seen.

Dilated Heart.—Massive dilation of the right auricle and right ventricle usually accompanies cirrhosis of the liver which occurs fairly frequently in one of our flocks. Individual cases are met with during routine *post-mortem* examinations.

Enlarged Heart.—Marked enlargement of the heart is a common lesion in cases of salt poisoning in young chicks usually accompanied by a considerable increase in pericardial fluid. A similar enlargement occurs in adult birds fed, over a long period, on a diet containing excess salt.

Hypertrophy of the heart is commonly found at autopsy of male birds, apparently in good health, which die suddenly. In these cases cerebral haemorrhage is frequently seen.

Salmonellosis.—Within recent years infections in young chicks with Salmonella other than *S. pullorum* have become more common. In many cases infection is introduced by the setting of infected eggs, the disease spreading readily in the incubator at time of hatching. Later, infection is spread in the brooder by food and water becoming contaminated by droppings.

Work carried out at Eskgrove showed that the organism was carried in most cases on the outside of the shell acquired during passage through the cloaca in the process of laying and in an extensive outbreak in a hatchery carriers were demonstrated by means of cloacal swabbing.

It was shown that penetration of the shell took place during incubation but that as this usually required two to seven days, fumigation of the eggs with formaldehyde gas as soon as practicable after setting was an effective method of control.

There has been a marked change in the incidence of the type of salmonella present. Formerly, *S. typhi-murium* and *S. enteritidis*

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came next in frequency after *S. pullorum*. For a period after the introduction of dried egg, types commoner in America were seen and in Scotland and Northern England *S. thompson* was most common.

Gordon & Buxton record the presence of *S. california, S. bareilly, S. montevideo, S. anatum, S. london*, and *S. bovis morbificans*, and in addition we have had three outbreaks due to *S. give* and one to *S. worthington*. Within the past year there has been an increase in the incidence of *S. typhi-murium*.

In an adult bird affected with *S. pullorum* there are usually well-marked changes in the ovary, resulting in distortion of the ovules to a varying degree. In some cases many of the yolks appear normal and only a single yolk or very few may show evidence of disease (Specimen B).

In advanced cases normal yolks are usually absent, the ovary consisting of a collection of small distorted stalky ovules (Specimen G), some of which may be free in the abdomen or attached to the abdominal wall.

It should, however, be appreciated that infection with *S. gallinarum*, the causative organism of fowl typhoid, produces an identical condition in the ovary.

In birds affected with other Salmonellas the ovary is not often affected but in long-standing cases, one or more distorted ovules may be present from which the causative organism can be isolated, *e.g., S. typhi-murium* and *S. thompson*. This is particularly so in ducks where infected birds frequently lay eggs containing the organism.

Necrotic Nodules in Chick Lungs.—Whitish-yellow necrotic nodules are frequently found at autopsy in chick lungs.

They are generally associated with *S. pullorum* infection but may be caused by other members of this group; notably *S. typhi-murium* and *S. thompson*.

Infection with aspergillus species causes lung lesions indistinguishable to the naked eye from those of Salmonellosis, but in this disease the air sacs even of very young chicks are frequently involved.

A bacteriological examination should always be carried out where numbers of chicks are dying. Our procedure is to make culture from the lever and lungs on McConkey and agar, and in sodium biselenite broth from the intestines.

The four plates shown are from chicks affected with *S. pullorum* (bacillary white diarrhoea), *S. gallinarum* (fowl typhoid), *S. thompson* and Aspergillus respectively. The very fine discrete colonies of *S. pullorum* will be noted. *S. gallinarum* gives slightly larger colonies and *S. thompson* and *S. typhi-murium* produce still larger colonies with a marked alkalinization of the media. Selected colonies are then tested in lactose, maltose, dulcitol, mannitol, sorbitol, glucose, saccharose, and salicin as in the racks exhibited. Final typing is carried out by serological means.

Newcastle Disease.—In view of the topical interest in this disease arrangements were made with Dr. Gordon, Veterinary Laboratory, Weybridge, to include specimens showing the classical lesions.

Four excellent preparations were on view showing haemorrhages in the proventriculus and gizzard, sternum, myocardium and intestines. The more chronic intestinal lesions characterized by ulceration with necrotic deposits were also portrayed.

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Rabies

Mr. J. D. Rankin (Ministry of Agriculture Laboratory, Weybridge) exhibited lantern slides showing the typical symptoms of the dumb form of rabies in the dog, the location and method of removal of the hippocampus and the cervical and plexiform ganglia, to compare the microscopic structure of the normal ganglion with that from a rabid dog, and to show Negri bodies.

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So-called Skin Tuberculosis

The demonstration (by Mr. Rankin) consisted of numerous photographs, pathological specimens, wall charts and maps. The photographs were selected to show the typical sites of the lesions of so-called skin tuberculosis on both the fore and hind legs. Pathological specimens included portions of skin mounted to show lesions complete and in section, and varying in size from an egg to a pinhead. A foreleg showing a chain of small lesions was also on view. Microscopic preparations were used to illustrate the typically tuberculous structure of the skin lesion and the presence of the acid-fast bacillus.

A leaflet summarizing the available information and describing the clinical picture was distributed.

Tuberculin Production

Following are notes on his demonstration furnished by Mr. A. B. Paterson, Ministry of Agriculture Laboratory, Weybridge.

The method of production of Weybridge P.P.D. tuberculins was illustrated by means of a small-scale demonstration and by several photographs and graphs. The salient operations at each stage were described by means of printed large type notices, while for those interested in the finer points of the process, detailed descriptions were provided, and for reference a copy of the article "Weybridge P.P.D. Tuberculins" by Dr. H. H. Green (*Vet. Journal.* (1946.) **102.** No. 9, pp. 267-278).

Tuberculin is essentially the filtrate from steamed liquid cultures of tubercle bacilli, usually concentrated by heat and preserved by addition of chemical agents. The principle responsible for the inflammatory reaction when this filtrate is injected into the skin of the tuberculous subject has been suspected to be tuberculoprotein since the time of Koch, but unequivocal demonstration that tuberculoprotein alone was responsible awaited the work of Long & Seibert in 1926 and the years following. Their work culminated in the production of pure tuberculoprotein in dry powder form and the name Purified Protein Derivative (P.P.D.) was finally applied to this preparation.

At Weybridge, P.P.D. tuberculin is prepared from mammalian and avian strains of *M. tuberculosis* by their growth on synthetic medium and precipitation of the tuberculoprotein produced by means of trichloracetic acid. The protein is washed centrifugally by dilute trichloracetic acid and acid phosphate buffer, followed by re-solution of the protein in alkaline phosphate and addition of preservatives. This concentrated solution, which is adjusted to *p*H 7·0, is passed through a Sharples supercentrifuge to remove about 10 per cent. of antigenic protein of low potency and the resulting concentrate stored in this form at 4° C.

When required for issue this concentrated solution is diluted with M/15 phosphate buffer containing 10 per cent. glycerol, 0·5 per cent. phenol and 0·5 per cent. sodium chloride so that its strength is 3·0 mg. protein per ml. in the case of "herd test" mammalian tuberculin, and 0·8 mg. protein per ml. in the case of "herd test" avian tuberculin, passed through bacterial filter pads to ensure sterility, and bottled in 1, 5 and 5 ml. phials. "Retest strength" tuberculin has protein contents of 1·5 and 0·4 mg. per ml. respectively. Avian tuberculin is coloured red with an inert dye to avoid confusion with mammalian tuberculin while carrying out the test.

All tuberculin before issue has its protein content accurately checked by chemical analysis, is titrated in guinea-pigs against a standard P.P.D. tuberculin and tested in infected and tuberculosis-free cattle.

A P.P.D. tuberculin thus produced on synthetic medium has the advantage that:—

(1) All protein appearing in the medium during growth is of bacterial origin.

(2) Substances produced during bacillary growth and which might give misleading reactions are eliminated.

(3) Tuberculin can be accurately standardized by chemical means on its tuberculoprotein content, thus ensuring unvarying potency in successive issues.

Several samples of P.P.D. powder, prepared by drying trichloracetic acid-precipitated protein with acetone and ether, were shown, and charts were displayed illustrating the appearance of tuberculoprotein in culture filtrate and the specificities of P.P.D. tuberculins prepared from six different types of acid-fast bacilli.

The Diagnosis of Trichomoniasis

This demonstration (Mr. A. E. Pierce, Ministry of Agriculture Laboratory, Weybridge) consisted of a series of photomicrographs, microscopical preparations and of apparatus. The photomicrographs were of stained specimens of *T. foetus*, at a magnification of × 6000 and showed also, at a magnification of about × 2000, the various phases of the aggregation of trichomonads on which the reading of the blood and the mucus agglutination test depends. The microscopical preparations, which were renewed daily, were of living organisms in the various stages of agglutination, and of the free-living protozoa that are sometimes mistaken for *T. foetus* in preputial washings. The apparatus displayed was that which is used for the collection of discharges from the vagina of the female or the prepuce or glans of the male.

The legend on the cards accompanying the various exhibits dealt first with *a tentative diagnosis of trichomoniasis from herd history and symptoms*; it drew attention to the essentially venereal nature of the infection and the significant association of the occurrence of breeding troubles with the introduction of new animals to the herd. The repeated return to oestrus of animals that have been served is also characteristic as is the presence of a copious vaginal discharge which is a frequent symptom in the early stages of an

acute outbreak. Early abortions, between the fourth and the 16th week, also occur. In these cases, however, the foetus is rarely seen, the only indication being a return to oestrus of an animal thought to have been in calf.

A second card dealt with *a positive diagnosis of trichomoniasis*. This, as yet, can only be made through the demonstration of the living parasite *T. foetus*. The most suitable materials for examination were enumerated as follows:—

1. Vaginal discharges collected ten to 20 days after the initial service to a suspected bull or a few days before the subsequent two or three oestral cycles might be expected.

2. Material from anoestrous animals with a chronic discharge.

3. Discharges from animals that have aborted within the previous 24 hours.

4. The recently aborted foetus and the fluids which accompany it.

5. Discharges from pregnant animals up to the fourth month.

6. Preputial washings. In this instance care must be observed not to mistake free-living flagellates for trichomonads.

A third card summarized the position regarding *the blood agglutination test* as follows:—

Negative reactions are meaningless. Positive reactions are significant but occur only in a small proportion of known infected animals. It is particularly unreliable in the bull, and must be regarded only as a herd test. Several blood samples each of 2 oz. should be submitted. The most suitable animals are: (*a*) Animals which have recently aborted and (*b*) Animals which show a chronic discharge.

A fourth card mentioned points concerning the new *mucus agglutination test*, stating that "certain types of vaginal discharge from infected cattle contain agglutinins to *T. foetus*. These are capable of rapidly immobilizing the organisms. They influence the appearance and disappearance of the trichomonad as had been observed in the field.

"A laboratory test is being worked out, based on the detection of these agglutinins, and promises to provide a further aid to diagnosis."

The intradermal test was mentioned as having given variable results. Work is still proceeding, however, in the hope that further modifications may ultimately provide a reliable test.

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Artificial Insemination

The purpose of the exhibit (Mr. D. L. Stewart, Shinfield, Reading) was to demonstrate the equipment and procedure suitable for carrying out the insemination of cattle in veterinary practice. In its essentials the equipment shown did not differ from that used on Artificial Insemination Centres in Britain and many other countries. Although the equipment is simple, great care must be exercised in the carrying out of all operations in order to achieve success.

Collection Equipment.—(1) Artificial vagina (short American type); (2) spare liners and collecting cone; (3) spare collecting tube (graduated); (4) lubricating rod; (5) white vaseline; (6) chemical thermometer (0° to 110°); (7) artificial vagina brush; (8) swab holder.

Method of Collection.—The artificial vagina is filled with warm water to a temperature between 42° to 45° C. and lubricated with white vaseline. (Pressure is adjusted previously when fitting lining.)

The bull is allowed to mount a teaser cow as for natural mating and by grasping the sheath, the penis is directed into the artificial vagina.

During the operation of collection, great care must be taken since experience shows that many bulls can be spoilt for insemination work by rough handling; too warm artificial vaginas; being made to serve on a slippery floor. On the other hand, if an artificial vagina is too cold, the bull will refuse to ejaculate. Slow bulls can be encouraged by changing the teaser cow, collecting the semen in a different place, or by leading the cow away from the bull and so teasing him.

Examination of Semen in the Field.—The average volume of an ejaculate from a mature bull is 4 to 6 c.c., young bulls usually giving a little less. The motility and activity of a sample of semen can be estimated by microscopical examination, using a low power. A drop of semen is placed on a slide under a cover slip and warmed either by means of a warm stage or a spirit lamp. A good sample of semen is indicated by active wave motion, and the density is estimated from experience. The accuracy of this type of examination depends on the operator having experience of many samples from many different bulls.

Dilution of Semen.—The diluting fluid consists of equal parts egg-yolk and citrate or phosphate buffer solution, which can be obtained from one of the drug firms or made up by a local chemist.

The semen is usually diluted at room temperature in the proportion of 1:15, but may in veterinary practice be diluted much less, *i.e.*, 1:2. Only simple laboratory equipment is necessary.

Formula of Diluents.—

Citrate 3·92 per cent. Sod. Citrate. *p*H 6·7.
Phosphate 2·0 per cent. Sod. Phosphate.
0·2 per cent. Pot. dihydrogen Phosphate. *p*H 6·7.

Transport and Storage of Semen.—On Insemination Centres, semen is stored in a household refrigerator at approximately 5° C., and it is used up to four days old. It is carried in a thermos flask containing a few cubes of ice, packed with cotton wool.

Technique of Insemination.—The usual insemination apparatus consists of a pipette made from capillary glass tubing, 18 inches long with a graduation at 1 c.c. This is attached to a 2 c.c. glass syringe by means of a piece of pressure tubing. Insemination of the cow is carried out by the grasping of the cervix through the rectal wall and manipulating the glass pipette through the cervix into the "body" of the uterus, where 1·0 c.c. of diluted semen is deposited. A sterile pipette is used for each insemination.

Sterilization of Equipment.—It is important that equipment used in insemination work should be clean and dry. The artificial vagina is cleaned by washing in hot water and washing soda.

It is essential that glassware be sterilized after cleaning and this may be done either by boiling in water and drying or by using a hot air sterilizer.

Experience has shown that by carefully using the method described, results can be obtained equal to natural mating, *i.e.*, about 60 per cent. of the animals inseminated will prove definitely in calf to the first insemination.

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Vesicular Lesions in Farm Animals

(W. M. Henderson, Research Station [Foot-and-Mouth Disease Committee], Pirbright, Surrey.)

1. *Foot-and-Mouth Disease: Lesions of Known Age, Ox and Pig.*

When an outbreak of foot-and-mouth disease occurs in the field it is of some importance to estimate the age of the lesions on the affected animals as this information is essential to the history of the case and, if the lesions are old, it may be used as evidence in the prosecution of an owner for attempt at concealment of the disease.

A number of specimens of tongues and feet from affected cattle and pigs killed at known intervals after development of lesions was exhibited to illustrate some of the features by which an estimate of the age of lesions can be made. The great variation that may be present in the rate of healing of the lesions makes it difficult to give more than a very approximate estimate of their age once the vesicles have ruptured. In general, however, the following summary may be taken as a guide for estimation of the age of tongue lesions of cattle:—

Appearance of Lesions.	*Approximate Age of Lesions.*
Unruptured vesicles.	0 to 2 days.
Newly ruptured vesicles with portions of epithelial covering still adherent to margin of lesion.	1 to 3 days.
Ruptured vesicles with no adherent epithelium and with no marked fibrous tissue margin.	Probably older than 2 days but less than 7 to 10 days.
Open lesions with marked fibrous tissue margin.	Older than 7 to 10 days.

In the pig most information can be got from a study of the feet lesions, especially those involving the coronary band. If the lesion is still at the coronary band it is unlikely to be more than about one week old, thereafter the break in continuity of the horn gradually grows down the claw at a rate of approximately 1 mm. per week; thus by allowing a week for the lesion to grow out of the coronary band and then a week for each millimetre from the coronary band a very rough estimate of the age of an old lesion can be made.

2. *Foot-and-Mouth Disease, Vesicular Stomatitis and Vesicular Exanthema of Swine.*

These three virus diseases are noteworthy for the similarity of their vesicular lesions in the mouth and on the feet of the animals they affect. In addition to the foot-and-mouth disease specimens a collection of lesions of vesicular stomatitis and of vesicular exanthema were exhibited from animals infected with the viruses of these specific infections, both of which occur in the United States

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of America. The nomenclature of the vesicular conditions of the mouth of farm animals is very confused and although the terms "vesicular stomatitis" and "vesicular exanthema" have been used to describe pathological conditions found in this country it must be emphasized that there is no record of the isolation in Great Britain of the viruses responsible for vesicular stomatitis and vesicular exanthema as found in America. It was felt, however, that the similarity of the lesions of the three conditions is so remarkable as to be of sufficient interest for demonstration. The attached table gives the main features by which the three diseases can be differentiated; in addition the virus strains of each disease can be classified into distinct immunological types:—

Foot-and-mouth disease.	Vallée O. Vallée A. Waldmann C.
Vesicular stomatitis.	Indiana. New Jersey.
Vesicular exanthema.	The occurrence of four types has been reported from California, namely, "Crawford A. B. C and D."

Besides these differences, generalizations can be made of the behaviour of the diseases in the field. For example, foot-and-mouth disease usually causes involvement of the mouth and the feet of the affected animals whereas the lesions of vesicular stomatitis are more commonly confined to the mouth; foot-and-mouth disease usually spreads with greater rapidity and affects a higher proportion of the susceptible stock than vesicular stomatitis. Outbreaks of vesicular exanthema have usually been confined to swill-fed pigs and although the final picture may be identical with that of foot-and-mouth disease, vesicular exanthema may be slower in development. These differences, however, are based on generalizations and the clinical features of individual outbreaks may be greatly modified by a variety of factors the most important of which are the susceptibility of the stock and the invasive character of the virus strain. The only certain method of differentiation is the experimental study of the characters of the infective agent.

Foot-and-Mouth Disease. Vesicular Stomatitis. Vesicular Exanthema of Swine.

Some Features of Differentiation

	Foot-and-mouth disease	Vesicular stomatitis	Vesicular exanthema
Susceptibility of animals and tissues most useful for differentiation:			
Horse	—	+	+•
Ox	+	+	—
Pig	+	+	+
Guinea-pig	+	+	—
Mouse brain	—†	+	—
Chick embryo and membranes ...	—	+	—
Size of virus particle	8–12 mμ	70–100 mμ	Intermediate between that of foot-and-mouth disease virus and vesicular stomatitis virus.

• Some strains reported to take by inoculation.
† Some strains have been adapted with great difficulty.

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Typing of the Virus of Foot-and-Mouth Disease

(J. B. Brooksby, Pirbright.)

The monthly incidence of foot-and-mouth disease in Great Britain since 1940 was presented graphically in a histogram, different colours being used to represent the types of the strains recovered from the various outbreaks. Attention was drawn to the periods of high incidence (over 50 outbreaks per month) lasting from four to six months, in which almost complete predominance of one virus type ("O" or "A" in the period under review) could be demonstrated.

Four maps were shown, recording the distribution of outbreaks during particular periods. The "peak" periods on the graph of incidence were shown to be due rather to spread at several centres than to an increase in the number of initial outbreaks. The period January, 1944, to February, 1945, was especially interesting in that both "O" and "C" types occurred during the greater part of the period, and both were widely spread over the country. This observation was made more remarkable by the fact that outbreaks originating in cattle were found to be due exclusively to virus of type "C" while the strains recovered from outbreaks originating in swine were of type "O" except in two cases when type "A" was found.

Brief notes were given of the methods used for the determination of immunological type of virus strains. In view of the need for rapid and accurate typing of field strains in any programme of immunization, the importance of research on typing methods was stressed, and emphasis laid on the value of the complement fixation test as an adjunct to the already well-established methods in guinea-pigs and cattle.

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Foot-and-Mouth Disease in the Hedgehog

(H. H. Skinner, Pirbright.)

In the Experimental Animal

Members of the foot-and-mouth disease research team in this country were the first to demonstrate the susceptibility of the hedgehog to infection with the foot-and-mouth disease virus and when a satisfactory source of supply and method of management had been evolved large numbers of these animals were used in research work (Stockman & Minett, 1927; Gibbs, 1931; Edwards, 1931).

Only adult animals in good condition are found suitable and, after a varying number of passages, virus from other species becomes adapted and produces a per-acute fatal disease which is readily transmissible to healthy hedgehogs by close contact. This is the only small experimental animal in which such spread occurs.

A detailed description of the lesions which develop has been published (Edwards, 1931). Briefly they may be described as vesicular lesions affecting the whole of the hairless epithelium of the feet. The epithelium of the tongue, snout, lips and perineum may also be involved. Death occurs about a week after the appearance of lesions which by that time have become dry and crusted and usually prove to be avirulent. In the fresh lesions the lymph and epithelium are highly infective.

It has been shown experimentally that a hedgehog in the incubative stage of the disease just prior to hibernation may harbour the virus in its tissues for at least two months and may develop and spread the disease on awakening (Hulse & Edwards, 1937).

In the Wild Animal

Foot-and-mouth disease virus was first recovered from a wild hedgehog in this country in 1933 when in November of that year one was caught alive on infected premises in Somerset two weeks after confirmation of foot-and-mouth disease in cattle, sheep and pigs. No lesions were detected on this hedgehog but the presence of virus in the blood and other tissues was demonstrated by the inoculation of guinea-pigs and the type was shown to be the same as that of the virus isolated from the affected animals of the premises on which the hedgehog was found.

A bovine infected with this strain of virus spread the disease to hedgehogs placed in contact with it, and hedgehogs infected with the same virus also spread the disease to a bovine (Andrews *et al.*, 1937).

There is, therefore, no reason to doubt that should wild hedgehogs become infected with the virus they are a potential source of infection for the direct spread of the disease to the susceptible farm animals, and are a dangerous source of virus for indirect spread. Whether the wild hedgehog has ever been the species primarily affected remains an open question.

A feature of a series of outbreaks of foot-and-mouth disease in Norfolk during the summer of 1946 was the finding of nine hedgehogs with well developed lesions of the disease. These hedgehogs were found on or near infected premises and it has been suggested that during these outbreaks affected hedgehogs were probably responsible in some instances for spreading the disease to cattle. This occurrence of foot-and-mouth disease in the hedgehog under natural conditions has been fully recorded by McLaughlan & Henderson (*J. Hyg., Camb.* in press).

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DEMONSTRATIONAL VISITS

The Moredun Institute

On Tuesday, July 29th, a party of members and their ladies (numbering approximately 300) visited Moredun Institute, the headquarters of the Animal Diseases Research Association where they were received by the director and Mrs. Russell Greig; the president of A.D.R.A., Mr. G. G. Mercer and Mrs. Mercer; and Mr. and Mrs. Arthur Golton. In extending a warm welcome to members of the Congress, Dr. Russell Greig pointed out that it was manifestly impossible for so large a number of visitors to inspect in any kind of detailed way the work in progress at Moredun, but that for those who that afternoon were seriously minded, members of the staff, stationed in different parts of the Institute, would give short addresses and demonstrations concerning the particular subjects on which they were engaged. It transpired that a large number were so minded and after an organized tour round the Institute, many attended the demonstrations; in this they were facilitated in that each visitor on arrival received a sketch plan indicating the location of the various research officers. Dr. James Stewart discussed pine and other trace element deficiencies. Mr. Das and Dr. McCallum demonstrated methods of metabolic assessment. Dr. A. D. McEwen demonstrated laboratory methods of mastitis diagnosis. Dr. Foggie dealt with tick pyaemia. Dr. Wilson discoursed on virus infections and Mr. A. M. Dunn was in charge of the poisonous plant garden.

But while many found continuous interest in these features, before very long the main centre of attraction proved to be the tea tent on the front lawn where the company were regaled, as they regaled each other in happy association throughout the remainder of a fine summer afternoon.

The director of Moredun has expressed the view that the research worker should, if possible, be set in pleasant surroundings which make not only for physical comfort but for mental peace and philosophic calm; it may be that the research achievements of his Institute are in part at least due to its beautiful environment.

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Gorgie Abattoir

On Tuesday afternoon visitors had two choices—Research Station or Gorgie. It is significant of the general attitude of the profession that the majority plumped for Moredun and that only a few specialists elected to visit Edinburgh's model abattoir.

There is a lesson in this choice and it would seem that the profession, beset on every hand with so many baffling problems, has turned instinctively to the research worker for their solution. The deduction is that, for the large majority of our profession, meat inspection has no attraction—it is a pity because meat inspection is the only link left which brings us into close contact with the large urban populations as an essential unit in the local Public Health services.

In competition with other openings available to our members meat inspection has little to offer—there is no glamour in it—for meat inspection is a "bread and butter" occupation, which means nothing to an age which demands cake. In some ways this is to be regretted, because we feel that here is a field of endeavour so far largely uncultivated by the profession, but one which offers exceptional opportunities for individual research.

At Gorgie we saw an undertaking in a semi-rural setting where it must be a pleasure to work.

The livestock market is generously provided with space; at least half belongs to the abattoir group and the remainder consists of two large private undertakings. The business transacted is divided between store cattle and fat stock, but it is interesting to note that, during the week of our visit, the first sale of T.T. stock was being held in an enclosed section of the market. This is a feature which we all hope will develop: although having no connection with our visit we could not but feel that it was a happy coincidence and we trust will prove a good augury for the future.

But what we had really come to see was how Gorgie had solved the highly complex problem of preparing and dressing animals for human food—which includes, of course, the suitable handling and disposal of edible and inedible by-products.

The key to success in this connection may be postulated as:—

1. Facilities for the hygienic handling of the stock and the resultant products.
2. Facilities for the inspection and disposal of condemned meat and organs.

We found that the cattle, sheep, and pig lairs were conveniently sited to the railways and sidings and that, in addition to the usual covered accommodation, grass paddocks were provided: this is a good feature, which has a day-to-day utility value, leaves room for future extension and adds materially to the amenities of the lay-out. Separate buildings are provided for cattle, sheep, and pigs, and each section has its associated slaughter-hall.

The principle of the open hall is employed for sheep and pigs, but for cattle a compromise is made with the old and the new—the hall is divided into booths, with open fronts, and a straight run through into the hanging-rooms. Stomachs and bowels are removed intact on low trucks to a point convenient for opening and disposal of refuse by chute to vehicles underneath, the edible parts then passing to their respective departments for treatment.

Except for the animals' hides, nothing is allowed to touch the floor—standard portable tubs are provided for the various items and removed by wheels to their various departments. The floor can be regularly cleansed between each animal by a suitably sited hosepipe in each booth. While simplicity is the keynote, everything is provided to encourage the art and practice of hygiene.

Two features remain to be mentioned:—

1. The Casualty and Detention Block.
2. The Inedible By-products Disposal Block.

The first is generously provided with four slaughterhouses and hanging rooms, a convenient laboratory and lecture room. The importance of this feature was appreciated by the visitors, and requires no elaboration here.

The second block, close to the above, deals with the condemned meat and organs, the inedible blood, fat, etc. Meat meals, inedible fat, and artificial manure, are produced here. Although this class of business is generally scheduled as offensive it was interesting to note that, although the day was warm, offensive smells were not evident outside and scarcely noticeable inside the building. This happy result is due, in our view, to a number of factors: the building was suitably sited, well built, generously equipped, and admirably managed.

There is no wholesale meat market associated with the group, although ample ground space is available for the future development of this feature. It will be interesting to see how Gorgie solves the problem of this extension, with its attendant transport difficulties.

Generally speaking, the whole lay-out is generous in its conception, with broad internal roadways, substantial in construction and equipment, and has the crowning merit of being simple in design. It is perhaps permissible to mention here that whereas municipal abattoirs are usually a charge on the rates, the Scottish business instinct has prevailed at Gorgie, to the advantage of the citizens of Edinburgh. These spacious premises were erected at no cost to the citizens. They were financed by the butchers and auctioneers and were originally managed by a joint committee of those who provided the money and the Corporation of Edinburgh. Later the control passed entirely to the Corporation. Each year the committee fixes the rates for users of the various facilities available and so no charge is made to the local rates. The slaughtermen are employed by the butchers and not the municipality as is the more common practice elsewhere.

In due course the company proceeded to the tea room, where generous provision was made for them by the Corporation of the City of Edinburgh. At the conclusion of a most interesting visit Mr. H. E. Bywater suitably expressed the appreciation of all the visitors, to the Corporation of the City of Edinburgh for their entertainment, to Mr. Norval, the Chief Veterinary Officer, and to Mr. Ewart, the manager of the market, and their staffs who conducted us round and cheerfully explained and discussed all the features.

Specimens from two of the hedgehogs found affected in Norfolk during 1946 were demonstrated, together with notes on the handling and care of the experimental hedgehog.

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Photographs of War Pictures by Major Philipson Moss

The Provisional Comittee were indebted to Major W. Philipson Moss, M.C., T.D., M.R.C.V.S., Westfield, Sussex, for enabling them to feature a unique exhibit which created considerable interest. This distinguished artist member of our profession has had a number of works, which he executed on active service, purchased by the War Artists' Committee, and they have featured in the exhibitions arranged by the Ministry of Information at the National Gallery, at Burlington House and at the Royal Scottish Academy. These striking and beautifully drawn pictures, and some commissioned subsequently, were represented by four excellent photographs—one of the picture showing the Machine Gun Section, Cheshire Yeomanry, going into action in the campaign in Syria; the other three drawings depict soldiers in the Druze Regiment—an Arab Formation of four horse and three camel squadrons.

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SOCIAL EVENTS

The Annual Dinner

The Annual Dinner of the Association was held at the Freemason's Hall, George Street, Edinburgh, on Wednesday, July 30th, 1947, with the President, Professor W. M. Mitchell, in the chair. Prior to taking their seats in the spacious banqueting chamber, members and their ladies, together with the other guests, were received by the President and Mrs. Mitchell. The company numbered over 300.

Those seated with the President and his lady at the top table included the following: Mr. L. Guy Anderson (President-Elect) and Mrs. Anderson; Mr. G. N. Gould (Senior Vice-President) and Mrs. Gould; Bailie Bruce Turnbull (City of Edinburgh); Bailie Banks (Chairman, Edinburgh Public Health Committee); Professor and Mrs. Matheson; Professor Bressou (Principal, Alfort Veterinary School) and Mme. Bressou; Dr. N. Plum (President, Danish Veterinary Association) and Mrs. Plum; Professor T. J. Mackie (Scottish Board of Veterinary Research); Sir A. Davidson (Department of Health for Scotland); Dr. J. M. Caie; Professor F. A. Crew; Mr. J. M. Graham (President, Royal College of Surgeons of Edinburgh); Professor Murray Lyon (President, Royal College of Physicians of Edinburgh); Mr. W. G. R. Oates (Secretary and Registrar, Royal College of Veterinary Surgeons); Professor S. J. Watson (Scottish College of Agriculture); Mr. D. Lowe (Vice-President, Scottish N.F.U.); Mr. W. Graham (Secretary, Scottish N.F.U.); Mr. G. C. Mercer (Chairman, A.D.R.A.), and Mr. J. Bartholomew of the Glasgow Veterinary College.

"The City of Edinburgh"

Following the honouring of the Loyal Toasts, Mr. L. G. Anderson, President-Elect, rose to propose "The City of Edinburgh." Mr. Anderson said: I am deeply honoured at being asked to propose a toast to the City of Edinburgh, and to couple with it the names of our hosts, Bailie and Mrs. Bruce Turnbull. My first thoughts of this city go back to the earliest days of my memory, for, as a small boy, my family was very much taken up with a beautiful etching of the castle which hung in our childhood home. Somehow this picture fired my imagination and I was determined to see the original as soon as possible. I regret to say that the fulfilment of this wish was long delayed but when I first saw this city, a year ago, I was in no way disappointed. Its beauty, dignity and solidity have been an inspiration to us in Congress here this week. Being a Londoner by birth, I cannot quite say that Edinburgh is the finest city I have ever seen, but my allegiance to my birthplace has been sadly shaken. I can only regret that both my visits here have been associated with meetings of the N.V.M.A., which means that I have had little opportunity to appreciate the full glory of the city.

It will probably not have come to Congress delegates as a surprise to learn that the Royal Dick, long and honourable as is its history, is not, in the view of the less enlightened, the city's most noted educational establishment. Some might claim that distinction for Fettes, the Academy, the Royal High School or Watson's College. Others might claim it for the University—or for its Medical School.

It might be diplomatic to refrain from being dogmatic on the point, but it will probably be safe to recall that in World War No. 1 and World War No. II, Edinburgh made a great contribution to the personnel of the Cabinet. Edinburgh believes in *mens sana in corpore sano*—her rugger grounds and her golf links are famed throughout the world.

That combination of improvements in education and the promotion of health is something which has a real significance for the veterinary profession in its present-day outlook on its task—(1) to raise progressively the standards of training and (2) to secure for the animal population the greatest possible degree of positive health and freedom from disease and in this way make a great contribution to human nutrition and to human health, both in controlling diseases communicable from animal to man and in improving the quality of animal products.

It is particularly fitting that our Congress should be held in a city which is associated with such great events in the history of veterinary education and practice in Edinburgh: the efforts of James Clark, as early as 1788, to develop veterinary schools; the fine achievements of that great fighter and clinician—the founder of your college; the pioneer work of Gamgee and Walley in meat inspection, and the more enlightened outlook in Scotland upon the veterinary contribution to public health, especially in regard to meat inspection and milk hygiene.

Nor can we, at this time, refrain from making reference to the great strides made in Scotland in the eradication of tuberculosis from their dairy herds. With Wales, they have set an example to the rest of the British Isles which could profitably be given careful consideration by our agricultural planners.

The course of these events in veterinary history seems typical of the general history of this city which has shown throughout the ages how the determination and fighting qualities—and, with some unhappy exceptions, the unity—of its people, have helped their just causes to triumph over almost overwhelming odds

Thus, your city and its citizens have set an example to the world both in their political history and in the narrower sphere of their veterinary history.

This spirit of determination and unity appears to be needed more than ever to-day both in our national affairs and in the conduct of our own professional development. Let us look with pride at what Edinburgh has achieved in the past and be guided wisely and courageously as to the future.

Bailie Bruce Turnbull, C.B.E., Deputy for the Lord Provost of Edinburgh, in reply, said: Thank you for all you have said about our city. We are proud of our city and justly so. It has been praised by all sorts of people, it grows on one, and like the island in "Mary Rose" I think it likes to be visited. I hope this Congress of yours will not be too long in coming back. I understand that it is 13 or 14 years since it was here; please do not stay away so long but come back soon. The establishment of an animal breeding research station at the Bush and Dryden Estates should act as an incentive to you to do so.

I have had the pleasure of meeting the members of your profession in all parts of the world but I think my earliest meeting with them was on the Francis Younghusband expedition to Lhasa a good many years ago when the veterinary surgeons had to struggle with a menagerie of animals, horses, ponies, donkeys, mules and the Yak. I think the Yak was the originator of the five-day week. They always used to tell us at school that the Yak was the finest beast of burden in the world; you can take it from me that that is a complete story, he will only work two days out of three and likes his Sundays off. We had some marvellous little Tibetan ponies which we used to ride; they would go on every day almost without stopping. It was much more comfortable to ride in a British saddle, however; it was painful if it was a Tibetan saddle.

In one of the passes we had staging camps; the transport was done by coolies and most of their loads were judged by weight, 80 pounds when dry, 160 pounds when frozen. The pass was 1,600 feet up, and the morning we were passing through the coolies struck work. We made a stethoscope out of a piece of wood, lined the coolies up, made them strip and sounded them, and at every tenth man we said, "You have a fluttering heart" and kept them away from work. The other 450 went on quite happily.

When we got back to India (I was in a pioneering regiment in those days) we carried all our stuff ourselves. I went on a transport and pioneering course and I learnt a lot. We had a very nice veterinary officer and we used to pull his leg by asking how the camel got his hump.

Mr. Anderson has said all sorts of nice things about Edinburgh. I feel a little like the young lady who was admired for her beauty by a young man and she said, "Thank you very much for your compliment but when you get to know me better there are all sorts of things in my character that you will like better than my beauty." I think that is true of Edinburgh; perhaps as you get to know more about her, the more you will like her, so you must come back pretty often to do that.

What is there left for me to say but "Thank you very much for the way you have received this toast and 'Haste ye back again'."

"The N.V.M.A."

Professor F. A. E. Crew, in proposing the toast of the Association, said: It is usual for a toast which pledges the health of an association such as yours to be proffered by a politician of prominence, since occasions of this kind can provide the means whereby there may be brought together in an atmosphere of good fellowship representatives of those who labour at the forge of scientific knowledge and of those whose first responsibility it is to ensure that such knowledge is wisely applied in the solution of the many and serious problems which beset a complex society such as our own. For this reason such occasions and such customs are to be welcomed, for nothing is of greater importance than that the two should meet for the cultivation of mutual understanding.

It seems probable therefore that I am but a substitute, and that what is referred to as the pressure of parliamentary duties, as this affects others is the real reason why to me this particular honour has fallen. Or, of course, it may be that it is accepted by our political leaders that your particular profession requires no special exhortations to make its maximum contribution to the welfare of the community as a whole.

But whatever the reason I am grateful for the opportunity that has come my way for paying my personal tribute to your Association, to the historical development of which Edinburgh men by birth or adoption have made their notable contributions.

Great social movements, social institutions of proven worth, have their origins in the thoughts, aspirations and devotion of a succession of men of noble character and far vision who ardently believe in the rightness of what they do and who find their greatest satisfaction in the service of a cause which commands their total loyalty.

This Association, through which your profession has become unified, which safeguards and expands its best interests and strives continually to ensure its occupation of that position in society in which it can render the greatest public service, was created through the intelligent appreciation on the part of a few individuals of changing social circumstance and its repercussions upon your profession and its place in society. In the list of those to whom this Association owes most in this connection the names of Fleming, its first president, Penberthy and Banham, its first secretary, at once suggest themselves, for these were they who so long ago saw clearly that if veterinary medicine as a profession and as an instrument of social policy was to flourish the multitude of disconnected local groups of practitioners which had come into being for the mutual advantage of those who comprised them must be merged through argument and persuasion into one single comprehensive body representative of the profession as a whole.

But before this nation-wide organization could come into being their thoughts had to become shared by the majority of the profession, experience in the changing social order had to corroborate their argument, and to their advocacy had to be added that of such men as Charnock Bradley and Arthur Gofton. It was fortunate for the profession and for this Association that its founders begat such heirs, for to these in large measure were due the realization of the founders' original aims and the transformation of an association which was national only in name to one which can truly claim to represent the whole profession.

Since the acceptance in 1914 by the profession of the recommendations of the committee appointed to draft a new constitution, the growth in strength and power of the Association has demonstrated beyond all reasonable doubt the accuracy of the vision and the soundness of the judgment of those who in earlier years worked to make these things possible. The membership of the Association has grown from 200 in 1920 until it is now some three-quarters of the entire profession. Its journal can claim an honourable place in scientific literature, and through the continued and active interest of the Association in veterinary education much has been done to elevate the status of veterinary medicine among the learned professions. To Mr. Gofton especially the state of health of the Association to-day must give very great satisfaction. The puling infant that he tended with such care has reached robustious maturity and acknowledges its indebtedness to him and to his colleagues.

The most recent war marked the end of an era, and we are now participating in a revolution which must inevitably yield profound modifications of our social structure. These changes must seriously and in a variety of ways affect your profession, its relationship to the State and to the community, its organization, even its philosophy. The time is long past when individual practitioners, participants willing or unwilling in these events, can be content merely to exercise their professional skills and to devote their knowledge to the maintenance and augmentation of animal health in their own restricted areas. These things they must do of course, but every member of a profession such as your own must recognize that the profession, the whole body of veterinary practitioners, must inevitably become involved in the execution of governmental plans and projects which have for their object the provision of the means whereby the needs of the people may be satisfied. Veterinary medicine in the hands of its practitioners as a group is now indeed an instrument of social policy which is being and will be used increasingly by the State for the achievement of its aims. The planned multiplication of livestock in this country, the planned expansion of agricultural production in the Colonies, for example, are projects which for their success must enlist the willing co-operation of your profession.

No one will disagree with the view that it is indeed necessary that the knowledge and skill of which your profession is the custodian shall be utilized in the best of ways to the greatest possible advantage of the community. But if the profession is to make its maximum contribution to the well-being of our people its views concerning matters which intimately concern it must be presented to and given the most careful consideration by the planners, by government departments and Ministers of the Crown. It is essential that there should be an understanding on the part of those who are to use veterinary medicine for such purposes as to what veterinary medicine is and what its practitioners desire and need. Your profession, unlike certain others, has no one in Parliament, there to state its views and press its claims.

To ensure that such consideration is duly given is one of the major tasks of the officers and Council of your Association, who in their ardent labours on your behalf in these most harassing days need more than ever before your unrestrained and continued loyalty.

There can be no more difficult, no more hazardous position which a man in our society can occupy than that of the presidency of an association of professional men. By his personal and professional qualities the profession as a whole is judged. It is true to say that to a very large extent the future of your profession is now being determined by the wisdom, the leadership, the representative nature of the statements and action of your President. It is therefore appropriate that I should couple this toast with his name. I have known Principal Mitchell throughout his adult life, and the longer my friendship with him has stretched the deeper has my respect for him grown. It is a matter of very great satisfaction to me to find that my assessment of his qualities made some 30 years ago in the midst of war has been more than confirmed by his election by his colleagues to the presidency of this Association.

You have good reason to face the immediate future with a certain confidence, for so long as your profession can attract and load with responsibility men of his quality, men of high integrity content to devote themselves selflessly to the service of their fellows, your Association undoubtedly will continue to flourish and to render service of great value to mankind.

The PRESIDENT, who was received with cheers and the singing of "For he's a jolly good fellow," in response said: This is the night of my life because things have been said which are so much in the superlative that I can never believe anything higher in the esteem of my fellows can be attained. Sometimes I feel that peaceful obscurity is the place for me; instead of that I am put in the front rank of a galaxy of talent which is far beyond me in quality. For most of my life I have been satisfied with using tools, sometimes for better, sometimes for worse, and no speech was required to defend and explain what I was doing, but here to-night I am dependent upon my own voice in answering Professor Crew and in facing you.

I knew when I asked Professor Crew to undertake this task that he would put up a bright story and that he could beat any politician. I think the members of this Association know better than our guests that I am not much of a politician; our politicians are on my right and left hand and I want to see one of them in Parliament. I appreciate that we do need in the House a politician with intimate knowledge of the profession, and I do not see why we should not have one. After all, we serve a very important community in this country and throughout the world by serving agriculture.

I have no desire to steal any thunder from the next toast of agriculture but I must weigh with agriculture an older love and that is our sister profession of medicine. I say that because here in Edinburgh William Dick first got his impressions about what he should do for the lower creation through attending human anatomy and chemistry lectures in the University and School of Medicine of this city, and what he learnt there inspired him to go forward and get a veterinary qualification in London which he managed in a very short time. He came back determined to set up a school of veterinary science in Edinburgh and even then he was certain that its place should be within the University. Where would we now be if what Dick foresaw should be the aim of the profession had come to pass at that time, 125 years ago?

The Lord Provost of the City, Sir William Arbuthnot, at the time Dick started teaching, put forward to the Senatus Academicus of the University the proposal that they should found a Chair of Veterinary Science, but at that time our young science was spurned. Even to the end of his life Dick bore no grudge at this rebuff to his aspirations for he left all his money partly to endow the school which he had founded and partly to found a Chair of Comparative Anatomy within the University and that Chair (unfortunately the money did not raise it to the status of a professional Chair) is held in the College in which you have been meeting this week.

Now we are knocking at the door of the University again; we have gone a long way in 125 years, and we hope that a helping hand will go out to veterinary education from this great University of Edinburgh, and we particularly look for help from our sister profession of medicine, not because we want her to dominate us, but for help. I think by this time we are able, with help, to go forward and progress more rapidly than in the past.

XUM

The Association's connection with medicine—perhaps Professor Crew might have stressed this—arose through the British Medical Association. In 1880 the British Medical Association met in Cambridge and for the first time they invited members of our profession to attend the public health section which was discussing diseases of animals communicable to man, and probably also as a respectful gesture to a great French Veterinary Surgeon, Professor Chauveau of Lyons, who was given the LL.D. of Cambridge University. At that meeting a group of veterinary surgeons, including some of the gentlemen to whom Professor Crew referred, listened to the discussion and appreciated that medical men did not know so very much about animals after all, so probably decided that they had something to teach them and said, "Let us found an Association of our own." The following year a British Veterinary Congress was held in London, but unfortunately disharmony occurred because those who originated the plan excluded from its membership all veterinary surgeons who did not possess the diploma of the Royal College of Veterinary Surgeons. When the University of Edinburgh refused to support the claims of Veterinary Science at the time Dick started teaching, the Highland and Agricultural Society came to his rescue and supported his efforts in two ways, first by a grant of £50 per annum, which I believe was all the money Dick ever received from public sources in support of his school, and second by granting a diploma to his students who satisfied a Board of Examiners appointed by them. This diploma was for many years the only qualification that many of Dick's students held to distinguish them as veterinary surgeons though by 1881 the Highland and Agricultural Society had ceased to examine in veterinary science. The practitioners who only held this diploma were much upset by being ruled out from taking part in the British Veterinary Congress but happily the promoters of the National Veterinary Association which sprang from the Congress recognized the rights of the holders of the Scottish diploma and withdrew the rule which threatened to divide the profession, and so the Association came into being in 1883. Its future history has been excellently told by Professor Crew.

I need say little more about the advancement and progress of the Association so ably dealt with by Professor Crew except to emphasize that advancement of our science must be our chief aim, and improvement of our profession must also progress by open and free discussion upon all subjects, subjects not only strictly professional but also political in character, and I would add also subjects with a humane complexion. We have always felt that those who come into our profession must be drawn in their younger days by a desire to assist the suffering dumb creation.

With regard to the present deadlock with the Ministry of Agriculture we must be ever mindful of our responsibilities and yet must always consider in a generous spirit questions which affect the interests and rights of individual members. I do not want to do more than touch upon the present political dispute in which the Association is involved but I regret very much that even the officials of the Department of Agriculture for Scotland have followed the miserable lead set by the Ministry of Agriculture last year and declined to come and sup with us to-night; on a social occasion like this they might have known that we would not be so ungracious as to bring in anything of rancour. I regret the position, we all regret it, and I must hope that before long my successor will be able to bring peace to our ranks. We are pretty solid and we can stick up for our rights, as you all know, but so long as there is unrest and a want of conciliation I do not think we shall get far with the great problems which confront the profession in its fight against disease. It takes two people to make a quarrel and two people to make the peace, and the sooner we get together to make the peace the sooner we shall advance.

So it is that part of my year of office has finally been rather spoilt because I had hoped that the officials of the Department of Agriculture for Scotland would be big enough to come and sup with us to-night.

I would like to end with the phrase from Lincoln's second Inaugural because I think it should apply in all the work of this Association: "With malice toward none; with charity for all; with firmness in the right as God gives us to see the right, let us strive on to finish the work we are in."

"Agriculture"

Mr. G. N. Gould, Past President, proposed the toast of "Agriculture." He said: I am honoured with the privilege of proposing the toast of "Agriculture"—the oldest and the greatest industry of the British Isles—the importance of which is even realized to-day by those who are more dependent upon it than ever before in our history and, therefore, more sympathetic in their attitude—the townsfolk.

The cereal crisis which preceded bread rationing, the reduction in the meat ration and further threatened shortages have accelerated that understanding and brought about closer union of those who work on the land and those who work in the towns; and this is, I am sure we all agree, desirable and necessary to ensure the proper and just future of the industry—to ensure that it will never again fall into the deplorable state of neglect it reached between the two great wars.

In war, the farmer achieves his full and proper status in the scheme of national planning and governmental support—in this era of post-war peace, there is greater need than ever for the full maintenance of an efficient agricultural industry producing the maximum quantity of foodstuffs for our people.

Agriculture has been described by the present Chancellor of the Exchequer, Dr. Hugh Dalton, as the greatest "dollar-saving industry of the country," and all good Scots will agree that a dollar saved is a dollar earned.

It was described by Sir John Anderson, the Chancellor of the Exchequer in the National Government during the war years, in the following terms: "Agriculture is not only a major industry, it is, in fact, our greatest industry, and its importance to this country after the war cannot be measured in words. We have to make ourselves, as far as we can, for some years—a good many years—after the war, less dependent on imports from overseas which put a burden not only on our shipping but on our exchange. . . ." How true that statement has proved! And how much there is yet to be done to implement the policy unfolded.

The Agriculture Act is undoubtedly a landmark in the history of the industry but can have little bearing on its immediate problems of man-power, housing, wages, marketing, credits, machinery, and other shortages, rising costs and the change of emphasis for the second time since the end of the war from production for direct human consumption to the maximum possible production of livestock and livestock products which will restore the balance of agriculture between stock and crop which is essential in the interests of soil fertility and agricultural economy.

The National Farmers' Union have described the Agriculture Act as "the Magna Carta of British Farming—provided it is efficiently administered"—and have accepted as their first duty the task of seeing that it is well administered. Let us hope they will have the strength, the fortitude, and the determination to ensure that end.

The National Farmers' Union of Scotland, which has, I believe, worked in close association with the English and Northern Ireland Unions, is represented here to-night by the Senior Vice-President, Mr. David Lowe. The service which such strong organizations can give to the country and to the industry has been emphasized by the increased stature and importance achieved in the last few years. The voluntary work of individual farmers themselves on the War Agricultural Executive Committees during the war years enabled Government policy to be implemented and the industry to achieve heights never previously realized.

Agriculture is an all-embracing industry and within it I include horticulture. Livestock and livestock products, however, constitute at least 70 per cent. of agricultural output. Nevertheless all branches of the industry are vital to the needs of the country. I make so bold as to say that no profession or science can contribute so much to agriculture to-day as the veterinary profession. I do not wish to weary you with statistics and estimates but it cannot be denied that the greatest limiting factor to livestock production is disease, much of which is controllable or preventable. If the urgent and ever-pressing need for the improved dietary of the people based on their proper nutritional needs and providing that diversified diet for which all are yearning is to be met, there must be great intensification of production of livestock and livestock products. Veterinary science has a unique and invaluable contribution to make; its wonderful progress in the last ten years, the confidence which has been engendered in the farmers themselves by its achievements and the obvious commonsense of formulating and initiating comprehensive disease control and eradication methods, in the light of the knowledge available, at the commencement of the envisaged expansion of the livestock population—in sheep, poultry, pigs, as well as cattle—should be obvious to all.

At our Congress Dinner last year Mr. James Turner, the very able President of the English N.F.U., expressed the hope that our difficulties which existed then with the Minister of Agriculture over the status and salaries of the whole-time veterinary officers of the Ministry of Agriculture and which show no hope of reasonable solution to-day "might well be the opportunity which must be grasped in order to secure for ever and posterity and for the agricultural industry as a whole an animal health policy which

will really safeguard the future of the animal population in this country." He added that "successful agriculture in this country can only be based on the livestock industry." The full confidence and support of the three Farmers' Unions which I believe we enjoy, is essential to this profession which is without doubt an integral part of the livestock industry.

I regret to say that there appears to be little if any progress in that hope for an animal health policy. What can be done is emphasized by the great part played by the veterinary profession and the farmers in Scotland in the eradication of tuberculosis—which is *but one* of the scourges of the industry. It is not generally realized how much individual practitioners have assisted farmers in their routine breeding, rearing, and feeding problems in addition to their acknowledged task in the control of disease. In fact, together, the practitioners and the whole-time veterinary officers of the Ministry and local authorities can and do render a service to agriculture and to the community unsurpassed by that of any other section of the nation.

Both the profession and the livestock interests are impatiently awaiting the formulation of a constructive animal health policy with definite objectives in disease eradication and control, the practicability of which has been demonstrated in Denmark, even under war and post-war conditions in America.

The esteem in which the panel scheme, initiated by the Association and sponsored by the Ministry of Agriculture and the National Farmers' Union, is held by these bodies, the vast interest which it has aroused in veterinary and agricultural scientists of other countries as a voluntary co-ordinated scheme to effect control of abortion, mastitis, infertility, and Johne's disease, is evidence of what can be achieved by co-ordination of effort and the utilizing of the scientific knowledge available to the best advantage. The hold-up in the change-over to university education for veterinary students and the control of unqualified practice is of great concern to the Association. We can justly claim that we at least are making every effort to expedite the long delayed initiation of this very desirable legislation.

It would not be fitting if I did not express our very great sympathy to the farmers of these islands on the disasters which befell them during the unprecedented winter which has passed. The sympathy of the country has been practically demonstrated by the success of the Agricultural Disaster Fund and of the Government by its £1 for £1 contribution to it. While the sum realized can meet but a small percentage of the losses, its expeditious distribution may well enable those most badly affected to survive.

In the international field, the farming organizations have carried an enormous burden in the build-up of the International Federation of Agricultural Producers and the Food and Agriculture Organization, the aims of both of which denote the indivisability of agriculture and the nutrition of the people. The aim of the Federation in the words of Mr. Kline, the American chairman of the Policy Committee, is "a world agriculture in which employment is attractive and which need not sacrifice soil fertility or exploit labour to produce food universally needed."

Mr. James Turner has acted as agricultural adviser to the present Minister at meetings of the Food and Agriculture Organization of the United Nations Organization. Their great and able director-general, a Scot of course, Sir John Boyd Orr, drew attention to the fact that the solution of many of the major problems of the world depended upon the feeding of the people, millions of whom are hungry and hopeless to-day. These organizations are doing great work under immense difficulties. We wish them well. Sir John was assured at our Congress last year that the British veterinary profession was ready and willing to make the fullest possible contribution to the implementation of any policy which may be formulated for the maintenance of animal health—the vital factor in production efficiency and, as he stated, to the solution of many of his problems.

I have to couple with this toast the name of Mr. David Lowe, of Musselburgh, for the last six years convener of the Fruit and Vegetable Committee of the N.F.U. of Scotland, senior Vice-President and an active member of a number of important advisory committees. His interests are essentially agricultural; he is a prominent market-gardener, and, in addition, an arable farmer on a considerable scale in East Lothian. North and south of the border, he is well known in horticultural circles and has a particular interest in progressive methods including the conduct of a large French garden producing a variety of vegetables and fruit out of season by means of artificial heating and irrigating the soil under glass, the development of which necessitates periodic visits to similar establishments on the Continent. His initiative and industry are self-evident and I can think of no more worthy representative of agriculture to respond to this toast.

Mr. David Lowe, Vice-President, National Farmers' Union of Scotland, in reply: I am reminded of an occasion quite recently when I had to reply to the toast of Agriculture. I was sitting then on the right-hand side of Mrs. Mitchell, as I am to-night. On that occasion your President, along with 180 farmers, of whom I was one, journeyed to Blairgowrie to pay tribute to Mr. William Nairn. No veterinary surgeon was ever so well received or so highly lauded as was Mr. Nairn that night. My personal friendship with him has been for years a high light with me. He is one of the chosen few and I am glad to say that he has recovered from a very serious illness and that evening, although he was his usual jolly self, he knew he was going through the Valley of the Shadow and had only a small chance of getting through.

I am not so well qualified for this job as I would like to be in talking on behalf of our greatest industry, Agriculture. My President would have done the job better and I realize that I am only a substitute. I, like all farmers, have had considerable contact with your profession, and I think it is only fair to say that one of the reasons many of us have had this contact is to make sure that we collect our insurance money when our animals die; when we have grass sickness, and we know the horse is doomed, we still get in the "vet" just to keep everything proper and have a decent and proper funeral.

I can remember well in the early days when, to maintain our fertility on my father's farm, we had some 40 stall-fed cows, and we often relied on the "vet" to save a newly calved cow, and when I compare the way in which the milk was produced in those days with present methods I wonder why we did not all die. When we think of the tremendous advances in tuberculosis eradication we realize that we owe a tremendous lot to veterinary research and I hope the day will come when the whole of Scotland will be a clear and free area. It seems terrible that such a scourge, if preventible, as we believe it is, should be allowed to continue. It is difficult, of course, to get anything passed which relies so much on the free will of the farmers concerned; education for the farmers is still necessary, but that education must reach fruition and every farmer accept the scheme.

I would like to see higher rewards for those engaged in research work. It seems to me that there should hardly be any ceiling for researchers in medicine, in animal health and even in diseases affecting plant life. We are so niggardly when it comes to paying a scientist for his work. In industry it used to be in this country, and still is in America, that the sky is the limit for a man who has brains and initiative, and cares to work for what he can earn. I would like to see all State-controlled services with the same—no limit to those who can make a go of it. Only thus can we get the proper people to enter into these services, only thus can we get the best, and it is absolutely essential that we have the best in veterinary science.

Between the two wars agriculture slumped and if agriculture slumps your profession to a great degree must slump also. Lots of people in this country believed that what we grew in this country did not matter, the whole world was very anxious to send its produce to these islands. It is true to say that Britain was a dumping ground for the surplus produce of most of the world; it is true to say, I think, that that will not happen again for many years to come. We were living then on capital invested throughout the world by the capitalist buccaneering pioneers who went out and discovered new countries, who started great industries throughout the ends of the earth, creating enormous wealth which most of us in our younger days have lived on. Very few of us realized that we were living on capital laid down in another age, but now we have to realize that we have to live by our own efforts, we must feed ourselves, and your profession is fundamentally important to that; we must have the maximum health in all our sheep, our cattle, our pigs, our goats, our poultry, in everything which is essential to our well-being we must have the highest possible standard of health.

We are trying very hard in Scotland to restock our hills; we want cattle and sheep on our hills; we have had many troubles, we have passed through very bad times indeed, and unfortunately the only way in which we can restock our hills is by means of subsidies. I hate the word "subsidy"; I think we should find a substitute because anything which can help us to produce food in this country should not be called a subsidy, it should be just made to happen. It must happen if we are going to live. Coal has been No. 1 priority for over a year now because we have been cold and our industry has been starved, but food will become No. 1 priority because we shall be hungry, and it is much worse to be hungry than cold. It is a pity that that should be, but there are not many countries anxious to go over to sterling and we must go on and work really hard as agriculture has worked hard; not only the farmers but all engaged in agriculture have done a six- and seven-day week job for years past and will continue to do so for years to come. We hope that although we may be slightly hungry we shall never starve.

XUM

Mr. Gould mentioned the International Federation of Agricultural Producers. I believe that in that Federation we have a real hope, taking a long-term view, for the world. Where politicians have failed miserably in the League of Nations and in U.N.O. the farmers of the world have a sporting chance to succeed. After all, we have no axe to grind, we are not politicians. We are people who are really interested in the well-being of the people in the different countries. We certainly look after agriculture first, but it is almost impossible to look after agriculture without looking after the people it employs. Agriculture is the most important industry in the world and I believe that if the farmers are united throughout the world we may yet bring prosperity to the world. We shall be able to take the surplus to the people who need it; by evening out world production there should never be hunger in the world, neither should there be any slumps in agriculture. All over the world there will be a need for progressively better farming and, leading to that better farming, better scientists.

I thank you for the way in which you responded to the toast of "Agriculture and the National Farmers' Union."

"The Guests"

Professor D. C. Matheson, proposing the toast of "The Guests," said: "I have no time to hesitate"; such was the favourite motto of the noted shipowner, Richard Green, who, in 1841, three years before we obtained our Charter of Incorporation, built the first Sailors' Home in the East India Dock Road, London, but the Manxmen have a more leisured proverb, Traa-dy-liooar—"Time enough"—so I may hope that if I do not hesitate I shall have time enough for what I have to say in proposing the toast of our guests to-night, all of whom are men who have attained distinction in the walk of life whereon their feet are set; many of them represent institutions or institutes which with them we delight to honour.

In the first place let me say how much we regret the absence of the Lord Provost of Edinburgh, Sir John Falconer, while we welcome his distinguished representative, Bailie Bruce Turnbull, who is supported by Bailie J. G. Banks. The interest of the City Fathers in veterinary education is of long duration; was it not the then Lord Provost of Edinburgh, the late William Arbuthnot, who, in 1821, approached the University of Edinburgh with regard to the establishment therein of a Chair of Comparative Anatomy, to include Veterinary Medicine and Surgery? Verily, and although the University authorities did not see their way to grant this request, they did admit that it was desirable that steps be taken to improve veterinary education in Scotland and suggested that the Highland Society (now known as the Highland and Agricultural Society) be approached with regard to the matter. The Society was helpful and supported William Dick with a grant which enabled him to found his School in 1823 and the Society has continued its interest in the College ever since. William Dick by his Trust Disposition and Settlement appointed the Lord Provost, Magistrates and Council of the City of Edinburgh his Trustees and on his death in 1866 the Trustees took over the administration of the College, and looked after its interests for 39 years, until in 1905, by arrangement with the Trustees, the affairs of the College were transferred to a representative Board of Management upon which the City and University were, and still continue to be, represented. The University has always taken an interest in the well-being of the College and in 1911 instituted degrees in Veterinary Science with a view to the furtherance of veterinary education. At the moment the relations of the University and the College are the subject of negotiations concerning which one may only say that in human affairs goodwill is a solvent of many difficulties.

We are proud to welcome among us to-night representatives of the Royal College of Surgeons of Edinburgh, of the Royal College of Physicians of Edinburgh, of the Department of Health for Scotland; men whose work is to make life more pleasant, death more remote. Need I say more? We also welcome representatives of our official body, the Royal College of Veterinary Surgeons, of which I shall have more to say later, and of the Glasgow Veterinary College, for which were I asked to choose a motto, I should, with all respect, suggest the one word "Indomitable."

We regret the absence from our gathering of official representatives of the Ministry of Agriculture and Fisheries, and of the Department of Agriculture for Scotland, but we have with us to-night men whose day's work has done much to promote the respect in which the Veterinary Department of the Ministry is held. The Highland and Agricultural Society, the Chamber of Agriculture for Scotland, the National Farmers' Union of Scotland, and the Edinburgh and East of Scotland College of Agriculture are represented. We have long memories, we do not forget our friends, so we may recall that in 1778 the Odiham Agricultural Society, Hampshire, commenced the collection of a fund to send two young men to France to be trained in Veterinary Science, but before this scheme could materialize, a Frenchman, M. Vial de Sainbel, arrived in this country, and he, with the aid of John Hunter and others, established a Veterinary School in Great Britain in 1791 though it did not get into working order until 1793. In this effort we were supported generously by the Press.

Many years ago, it is related, a teacher took his class of young children up to the top of a high hill from whence they could see the countryside, ripening to harvest. "Look, my children," he said, "at the great table which Providence has spread before us—a table from which in their several ways all creatures—man and beast—are nourished from one year's end to the next. Give thanks for that table every time you are privileged to look upon it."

One cannot but feel that were this lesson inculcated more thoroughly into the youthful town dwellers, we should have fewer trampled fields, broken boughs and wasted flowers. And, under Providence, the provision of this table is the work of the agriculturalist; well may our Scottish poet, Thomson, exclaim: "Ye generous Britons venerate the plough!" If the right hand of Britain be commerce and her left her men of war, if her brain be science, her backbone is agriculture, for the strength of a people is in their food.

While we sit here enjoying the fruits of the earth which the agriculturist, the manufacturer, the artisan and indeed many others have laboured to provide, some of our brethren are out and about in dimly lit stable, fragrant byre or on windswept hillside, dealing with colic, milk fever, or the ills that sheep are heirs to, or that pigs cannot avoid or dogs by barking cannot keep away; yet these practitioners as they go about their lawful occasions cannot but feel, with us, grateful to the Agricultural Research Council, the Scottish Board of Research in Veterinary Science and to the Animal Diseases Research Association of Scotland and other Research Bodies represented here to-night whose labours have secured that louping-ill, lamb dysentery, braxy, bacillary white diarrhoea and other diseases are not the menace they once were, and if the cause of grass sickness be still elusive shall we not encourage ourselves with Robert Herrick's words:—

"Attempt the end and never stand to doubt,
Nothing's so hard but search will find it out!"

We rejoice to number representatives of the Press among our guests to-night; for what the Press hears to-day the world learns to-morrow—and very often the same evening; moreover, we feel that our work is not understood by the public as well as we had thought or even hoped. I have said before and I may say again: our work is to prevent disease, to relieve suffering and to restore usefulness. We are not a young profession; practitioners of our art can be traced back to the dawn of history. We obtained our Charter in 1844 and since then 15 of the more serious animal plagues of Europe have been scheduled for control in Great Britain and seven of them have been eradicated, and are kept out of the country by incessant vigilance in the application of the means designed for that end: we watch and stop!

With preventive medicine one is apt to think that because nothing happens nothing is being done, but it is because something is always being done that nothing happens. Foot-and-mouth disease occasionally gains an entrance but only to be surrounded immediately and exterminated; other diseases like swine fever and tuberculosis are deeply rooted, but are being attacked vigorously; their eradication will be difficult and even prolonged but if I may paraphrase a famous sentence I would say to the public through the Press, "Give us your support and we will finish the job!"

Industrious Belgium and Holland, beautiful France, bracing Denmark, Norway and Sweden, have sent delegates to our Congress, whom we rejoice to welcome among our guests this evening. We owe much to the work of scientists in these countries and our guests have, each in his chosen sphere, added to the sum of human knowledge, than which there can be no higher praise: they will be remembered by what they have done; and they would ask no more. We trust they may enjoy their visit and carry away good impressions that will become happy memories; that may tempt them to come again. One of the significant post-war developments has been the exchange of student groups, and parties of children between the nations, that each may learn more of the other to their mutual benefit. The young visitors arriving on a foreign shore may listen to the lapping of the waves; or, passing inland, may hear the soughing of the wind among the trees, or the ripple of the streams: they may hear the lowing of the cattle, the bleating of the sheep or the barking of the dogs, all familiar sounds, but alas when they would converse with their fellows can they understand or be understood? Interpreters will be there to help and children learn quickly, but how much better if they shared a common tongue. Before we can really progress in international brotherhood we must have the verbal means of thinking alike.

Our guests to-night have honoured us by learning our language: some of us have endeavoured to reciprocate, but we need a common language, based on scientific principles and easily learned. None of us would yield to the other in our admiration of our mother-tongues, but the languages of Europe have been of slow and irregular growth and their acquisition is difficult. My very duty to-night to propose the toast of our guests may require some explanation, for toast is a piece of scorched bread, and to toast is in the first place to scorch. Formerly it was the practice to place pieces of toast—scorched bread—in the fluid which filled the stirrup-cup with which the guest was regaled before departure and so gradually the practice gave a name to the ceremony and to toast became to pledge the health of a guest. Whether the weather will suit the wether is a question which may interest the sheep farmer, but it can be only a source of difficulty to the visitor from overseas. Can we not convert the Tower of Babel into a beacon on the highway to international understanding? I am aware of efforts in this direction—basic English, Esperanto and others, but these international exchanges of visits by our young people render the question more urgent. Shall we not say to educationalists the world over:—

Give us a common language,
One that we all may read
And speak to our fellows wherever they be,
This is a world-wide need!

But now in our own beautiful tongue and with all respect to theirs we would say to our guests from everywhere, may there be peace in your borders, contentment in your homes, joy and aspiration in your hearts.

Dr. N. Plum, President, Danish Veterinary Association, in reply, said: May I say how greatly the Association which I have the honour to represent to-day and myself appreciate your invitation to be one of those who will reply to this toast for the guests.

Looking upon myself as a representative of the guests from abroad I thank you for the kind words you addressed to us and for the kind invitation to attend your Congress and to take part in this excellent dinner.

We foreigners are always very happy when we are going to visit your country. Not only do I think that we were all curious to see how the conquerors of the world war are living, but I think we all had a desire to shake hands with some of you from the British Commonwealth and thank you for all you have done for every civilized country in Europe.

It is heartening to learn how welcome we all are, but I am sorry to say that this year on my arrival to your country I was very disappointed. The disappointment came suddenly when I entered a tobacco shop. What prices you have; this was shocking! For a long time I had looked forward with great pleasure to my visit and I have explained to my friends how much such a visit would mean to me. You know, meeting all these brilliant people and then being able to buy the best tobacco at a small price. Dear me, how that has changed during the year that has passed—now the prices are higher even than those in Denmark. But the tobacco is better and that is why I hope that when I come back—may that be soon—the prices will have decreased again. But perhaps this hope is—oh, I beg your pardon, but now I am in trouble because I do not know the exact difference between inconclusive and doubtful, but perhaps it is only because I have not searched enough in The Introduction of the Single Intradermal Test, Circular No. 470—(Laughter): I shall try to correct my stupidity.

The other disappointing thing is that I had no opportunity to see Mr. Winston Churchill himself. You must understand that for most non-British people the nature of the Briton is personified in this man. I think the whole world is jealous of you on account of him and the soil and spirit of which he is born. But we have much more we envy you very much. Let us to-day keep to the veterinarian only. We have seen many of your research stations and I may tell you that we all should like to have only one of those beautiful institutes. In most other countries the veterinarians have none because their governments do not understand the importance of veterinary work.

In this country we find a very good relation between the farmers and their associations. I congratulate you on this co-operation. I should like to see the same in my own country—but there it is the opposite—unfortunately. Last year I learned and this year I understand that your troubles with the Government are still going on. We are sorry to hear this, but we want to take the opportunity to tell you that the veterinarians all over the world are interested in this quarrel—because this fight does not go forward only for British veterinarians but, in fact, for veterinarians all over the world, and we all follow it with the greatest sympathy.

The thing a veterinarian from abroad must envy you most of all is, however, the Veterinary Educational Trust. We are looking with envious eyes upon all the money you get—naturally we hope you will get much more, but is it not human to think: I wish it were my country which could spend so much on the education of young veterinarians who have shown their ability to profit by further education. We all congratulate you upon this Trust and are quite sure that you will get splendid results out of it.

Sir Thomas Baxter, Chairman of the Milk Marketing Board, replied to the toast for the guests last year. He said many good things about the veterinary profession and at the end of his speech he mentioned, by the way, that the organization he represented had granted the Trust £10,000 sterling. I am sorry I am not in the same situation to-day. My Association is not able to make a contribution like this and I think that all the guests from abroad, even together, could not do it.

But from the foreign guests I want to give you one thing which moth and rust cannot corrupt: that is our best wishes for your Society and all your members. Of course, this is not as material as money, but you must console yourselves with the thought that these are our best wishes—they are inexpensive, you may think, but I assure you they are durable, they are everlasting.

Dr. J. M. Caie, also in reply, said: It is embarrassing to have to reply for such a brilliant and cosmopolitan galaxy as is comprised in your guests to-night. I am glad that the responsibility for replying for the overseas guests has been so brilliantly discharged by Dr. Plum. I felt specially perturbed at answering for our distinguished visitors from foreign countries, from the Dominions and from Ireland. I would thank Dr. Plum for the delightful speech he has given us and for relieving me from a task which might make even Mr. Ernest Bevin shake in his shoes.

Perhaps for the home guests I might say a little more. I had hoped that Professor Robertson would give me some interesting and entertaining biographical details about them but I am sorry to say he has not done so. One reason may be that the facts were so horrific that they could not be trusted to the eyes even of a discreet ex-civil servant like myself. Another explanation may be that you have led such virtuous lives that there is nothing spicy to say about you. At any rate, I have nothing to say which would bring the slightest blush to the cheek of the youngest veterinary surgeon present. Among the many veterinary surgeons I have known I think I must have met at least one who could blush but I cannot remember who he was; if he is here to-night he need not feel the slightest anxiety.

Failing individual particulars, I shall deal with the guests by categories. My first consists of two distinguished magistrates of this city. Never before have I attempted to answer for a Bailie. Indeed it is only by the grace of God that I have not had to answer questions put to me by a Bailie instead of replying for him. There may be some visitors from the city who do not know what a Bailie is. He is a very important person. I would just warn you that if any of you look upon the wine when it is too red, or you look upon a policeman when he is too blue and decide he would be improved by being made black and blue, or you park your car for five minutes when the magistrates say it should be only four, you may find yourselves before the Bailie to-morrow morning. That would grieve me, but if you were all hauled up and very heavily fined it might relieve the rates, which would afford me a little comfort. This responsibility for answering for two bailies weighs heavily on my mind and I must go on.

My next group is five professors. I regard all professors with veneration. I believe there is a native tribe the members of which, when they approach their tribal gods, prostrate themselves on the ground and gyrate umbilically before them. Figuratively, that is how I feel about professors. A professor is a person who dwells in the realms of pure thought; the older he gets the purer is his thought. I have heard of professors whose thoughts went on getting purer and purer, more and more refined, so delicate that the ordinary spectator could hardly make out whether they were really thinking at all. I am informed that even in such a case their power of speech fortunately remained unimpaired and nobody noticed very much wrong with them. I am glad to think that those who are present to-night have not quite attained the ethereal state in which they are unable to appreciate the material hospitality accorded them or the intellectual intercourse around them.

I come to members of the medical profession, some of whom are professors, and some of whom are veterinary as well as medical. I do not know whether there is very much difference between the medical and veterinary professions, the closeness of which has been mentioned. I fancy the bedside manner may vary a little but I am not sure. It may be that the bedside manner required of a veterinary officer attending a sick tigress in the Zoo is much

the same as the medical man needs when attending, say, a spinster of uncertain age and temper. I do not know, for I have little experience of spinsters and none of tigresses.

There are two gentlemen I should mention connected with veterinary organization, Mr. Mercer, Chairman of the A.D.R.A., who has devoted a great deal of his activity to that Association, and in the same category with him there is a gentleman from Glasgow. For the benefit of our two Edinburgh magistrates, I would emphasize the words, a *gentleman* from Glasgow. May I explain why, even though my explanation may border on the indelicate? There is a street running southwards from the Post Office in Edinburgh, and about a mile out at right-angles to the street there is another street called Preston Street. That street runs east and west. At the corner there is an iron standard, the main purpose of which is to support the tramway wires, but there are also two direction indicators on it, one of which points due westwards and one due eastwards, one above the other. The one pointing due westwards says "To Glasgow," and the other, pointing in precisely the opposite direction, says "Gentlemen." That shows what our municipal authorities think about Glasgow but I hope they will agree that anyone who comes from Glasgow to Edinburgh as your guest has done, may indeed be a gentleman.

I have also to reply on behalf of the Farmers' Union; that, too, is a considerable responsibility. I have always treated the National Farmers' Union with the greatest respect. I thought Mr. Lowe was unduly modest. It is quite true that they have produced wealth and food from the soil, a wonderful and clever thing to do, but the Farmers' Union does something much more wonderful than that: they can screw large wads of money out of the British Treasury. I used to think in my departmental days I could do something in that direction myself, but when I watched the National Farmers' Union I had to admit that I was only an apprentice. Mr. Lowe spoke about subsidies but I have always been led to believe by the farmers that none of the subsidy goes into the farmers' pockets. I have heard them say quite often that it goes into the consumers' pockets, including my pocket. It is all very confusing but apparently the Farmers' Union go and extract millions from the British Treasury and immediately say, "We do not want this money, give it to the consumers," and apparently it goes into my pocket, although I do not notice it. Then the Treasury says to me, "You can use that money to pay more taxes," and back it goes. No sooner is it in the Treasury again than the Farmers' Union . . . (the rest of the sentence was drowned in laughter).

Lastly, we have the Civil Service. I speak of that with some emotion because I retired from the Civil Service about 18 months ago after what many of you may regard as a prolonged career of crime. I believe the reason for a retiring age is that the Civil Servant shall have time to repent of his many sins before he makes his final exit, but I doubt if it always works out like that. When I retired I cannot say that I was conscious of great sin, but I set about the work of repentance and repented at such high pressure that I venture to hope I was able to wipe out any deficiency I had in the bank of morality and to accumulate a considerable credit. The danger is that having repented so successfully I can now embark on a new career of sin and what the end of that may be I do not know. I trust if I do commit any sins in the future they will be more entertaining than those in which I was supposed to indulge as an official.

You will all have your own ideas about civil servants, whether they are good or bad, and whether they should ultimately go up or down. If they go up they will be in for a perpetual musical festival. That prospect has no terrors for me, though there are some sounds which pass for music which, if I heard them at the top of the golden stairs, would make me think I had taken the wrong turning. But some may hold that the proper destination for the Civil Servant is another region, one where the fuel industry is so perfectly organized that even Mr. Emanuel Shinwell might be able to learn something there. Possibly there may be a few people in this country, even in this room, who would be reluctant to deny that gentleman the earliest opportunity of pursuing his studies in that well-warmed academy.

As you can see, I have an extremely varied lot of persons for whom to reply, a mixed bag but all birds of very brilliant plumage. They all have this in common, that they are greatly honoured to have been your guests to-night and if in the course of time this Association comes back to Edinburgh, and if the Farmers' Union are able to produce any food then, I trust you will ask us all back and if you do you will get our acceptance by return of post.

Luncheon to Foreign Delegates

The President and Mrs. Mitchell gave a Luncheon to the Foreign Delegates attending the Conference in the Royal (Dick) Veterinary College, Edinburgh, on Tuesday, July 29th.

The following were among the guests: Mons. A. Bouchet and Mme. Bouchet (France); Professor Bressou and Mme. Bressou (France); Professor and Fru. Brandt (Norway); Professor and Fru. Eriksson (Sweden); Professor Liegeois (Belgium); Professor van der Plank (Holland) and Dr. N. Plum (Holland); Dr. A. Robinet (France); Dr. and Fru. Ottesen (Denmark).

The Loving Cup was filled and passed round to all the guests.

The President: It is very pleasing to be able to welcome you here, partly as President of the Association, and partly as Principal of this College; the posts are amalgamated for the time being.

Our friends from overseas are extraordinarily welcome, and particularly in this College as so many of you come from sister colleges on the Continent. I welcome also my fellow officers of the Association. It is the friendly spirit which has brought so many of you to this country at such a time as this, when we have very little to offer you in the way of hospitality. You may imagine that we always live in the same way as we have lived the last two nights, but do not make any mistake about that! When you go round our countryside to-morrow, you can imagine how we live in the winter-time. But even if we have a somewhat bare cupboard, it is a great pleasure to welcome you and pass on the friendly greetings of the Edinburgh Congress of the N.V.M.A. and the College. It has given my wife and I great pleasure to meet you here to-day.

Mrs. Mitchell: You have had more than enough of speeches, but it does give me very great pleasure to meet you in this informal way. I hope you will enjoy your visit to Scotland; that is all that matters. I hope we shall see you all again in the very near future, and I hope you will enjoy the remainder of the Conference.

Dr. van der Plank: Perhaps we shall have an opportunity to thank you for all that we have received in these few days, but, on behalf of all your friends visiting you from overseas, I would like to thank the President and Mrs. Mitchell for this luncheon and the friendly manner in which you have received us.

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The Receptions

Each of the first three evenings of Congress was made the occasion for a reception, and the crowded attendance and manifest enjoyment of the company at all of them indicated that this arrangement was entirely acceptable.

The reception by the Scottish Metropolitan Division on Sunday, July 27th, admirably fulfilled its primary function as the time-honoured means by which the local Society opens Congress Week by hospitably entertaining arrivals from abroad and all over the country, affording the greatly appreciated opportunity of meeting old friends and of "getting together" by the great N.V.M.A. assembly. After being received by Mr. James Milne, the President of the Division, and Mrs. Milne, there was immense enjoyment of a musical programme, introduced by Mr. S. Jennings.

The music was rendered by the Edinburgh Highland Reel and Strathspey Society. The members of this society, said Mr. Jennings, assemble together for the simple joy of playing and perpetuating Scottish National music on the violin. They had most kindly come along to the reception to start the Congress off with something which was Scottish to the backbone. The society was founded in 1881 and it held the amazing record of having had but two conductors and two leaders during the whole of its history. The present conductor, Mr. Ian C. Menzies, who was a solicitor in the city and a keen agriculturist, succeeded his father as conductor. His father was also one of the founders of the society. There were 17 players.

Scottish songs were also sung by Mr. Robert Sutherland, tenor, and Miss Anne Blake, soprano.

Thanks to the Edinburgh Highland Reel and Strathspey Society were moved by Professor D. C. Matheson, senior Vice-President of the Metropolitan Division, and most heartily accorded, as were thanks to the Division, proposed by Principal W. M. Mitchell, President of the N.V.M.A.

Words of welcome were spoken by the President of the host Division, and the guests were announced by an old servant of the "Dick" College, Mr. Joe Peaples, the janitor.

Catering was admirably carried out by the "Dick" College Staff in the recently enlarged and modernized refectory.

The President's reception and dance at the impressive Freemasons' Hall on the following evening had been eagerly awaited as the social opportunity of paying tribute to the President and Mrs. Mitchell for their devotion to the work of the Association during the year: indeed, an "overflow" gathering at the "Dick"

College was necessitated. At both venues the hours passed all too quickly, a memorable evening's pleasure adding to the indebtedness felt by the members and their ladies to their genial hosts.

The Civic Reception

The Lord Provost, Magistrates and Council of the City of Edinburgh gave a reception to the members attending the Congress in the City Chambers on the evening of Tuesday, July 29th.

The guests were received by Bailie and Mrs. Turnbull, attended by the City Halberdiers, and the members of the City Council were also present attired in their red robes.

The Senior Assistant City Officer was in charge of the gathering and during the evening he told the story of the historical paintings executed by William Holt and which were presented to the City of Edinburgh by various public benefactors.

Music was provided by a musical trio—Mr. G. Short, pianist, Miss Diana Crichton, violinist, and Miss Cora Young, cellist—and Miss Ella McConnell (soprano) sang some groups of songs.

Refreshments were served in the Smoke Room and Library.

Bailie Turnbull, in welcoming the guests, said that it was again his very great pleasure to welcome the National Veterinary Medical Association of Great Britain and Ireland to the City Chambers, the home of Local Government in Edinburgh.

He deeply regretted that it was not possible to invite all the members attending the Congress, but lack of accommodation prevented it.

Since he attended the opening of the Congress there would have been many discussions on a variety of subjects, and he was glad that he was able to provide an opportunity for them to relax. He hoped they would enjoy themselves as much as the City enjoyed having them as guests. He trusted that in Edinburgh they would find all that was necessary for the success of the Congress and that their deliberations would make a valuable contribution to the furtherance of veterinary science and practice.

The President, in response, thanked Bailie Turnbull and through him the City of Edinburgh for their gracious hospitality. Fortunately, as a citizen of Edinburgh, he knew that this hospitality would not have the effect of increasing the rates, as there was a fund to provide hospitality to the City's guests.

The proceedings, which were greatly enjoyed, were closed by the singing of the National Anthem.

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Ladies' Outing to Lauriston Castle

On Wednesday afternoon, July 30th, a very enjoyable Ladies' Outing took place to Lauriston Castle which is situated on the outskirts of the city overlooking the Firth of Forth. This was formerly the home of the late Mr. and Mrs. Reid and was bequeathed by them to the City of Edinburgh. It contains many priceless treasures and *objets d'art*. The antique furniture, tapestries and carpets are all in place as during the owner's lifetime. The visit proved a memorable and interesting one and was much appreciated by the party.

[*Photo : Evening Dispatch, Edinburgh.*

The Civic Reception

L. to R.—Mrs. G. N. Gould, Bailie Bruce Turnbull, Mrs. Mitchell, Principal W. M. Mitchell (President, N.V.M.A.), Mrs. Turnbull and Mr. Geo. N. Gould (Senior Vice-president, N.V.M.A.).

The Perthshire Tour

The popularity of this tour was amply demonstrated, when promptly at 9.30 a.m. on Thursday morning, four coaches, completely filled, left the front of the Royal (Dick) Veterinary College.

Leaving Edinburgh we passed the Zoological Gardens and soon came to Turnhouse Aerodrome, the home station of the now famous 603 Squadron, who drew first blood from the Luftwaffe in the autumn of 1939. In a little over an hour we ran through Linlithgow, getting a glimpse of the ruined palace, the birthplace of Mary Queen of Scots. The next part of the journey was through part of the industrial area of central Scotland, the busy town of Falkirk being the centre of the light metal industry, known to every veterinary surgeon by the product "carron oil" evolved for the treatment of burns in the carron iron foundries.

Passing through the Stirlingshire coalfields we came to the village of Bannockburn, which is some distance to the north of the site of the battlefield. In a few minutes we were threading our way through the busy streets of Stirling, with its ancient castle crowning a rocky ridge in many ways closely resembling that of Edinburgh. From Stirling we went west along a flat fertile area that we were told had been reclaimed from marshland by Flemish drainers brought in to do the work at the instigation of James V of Scotland. Leaving the industrial area behind we entered Perthshire when we crossed the Forth. Soon we crossed the river Teith at the Tailor's Bridge, said to have been erected at his own expense by a master tailor who resented the charges made by the ferryman who used to ply there. Engraved on the centre stone of the bridge are to be seen the implements of the tailor's trade, the flat iron and scissors.

Skirting the little town of Doune, with the great mass of its ruined castle, we followed the valley of the river Teith through beautiful wooded country to the popular holiday resort of Callendar. At Callendar a halt was made for an excellent lunch, particularly enjoyed by those who had been at the annual dinner the night before and who perhaps, because of the lateness of the hour of their return to bed, had found little time for sleep and breakfast before our early start. A few miles beyond Callendar we passed the little hamlet of Kilmahog where the road to the Trossachs branches off to the west. Our journey continued in a northerly direction and took us through the pass of Leny, where the river, enclosed in a rocky gorge, presents a series of magnificent falls. Presently we came to Loch Lubnaig, a lovely sheet of water enclosed in steep, tree-clad hills, shimmering in the heat of a perfect summer's day. The road winds along the east side of the loch and the Oban line of the L.M.S. railway runs along its west side, road and railway joining at the village of Strathyre. All through the Loch Lubnaig area was evidence of the activities of the Forestry Commission.

After Comrie the valley widens out and the route led us Kingshouse Inn where the road branches off to Balquhidder, the birthplace and burial place of Rob Roy, immortalized by Sir Walter Scott.

Very soon we passed over the watershed and got our first glimpse of lovely Loch Earn. Passing by the western end of the loch an eastward turn was made at Lochearnhead to follow the road along the northern side of the loch. To the south of the loch rose the massive bulk of Ben Vorlich. The almost incredible beauty of the scene drew expressions of admiration from our party; the delight of our foreign delegates being especially evident. The perfect weather that favoured us on this day put the final touches on our enjoyment of the tour.

Seven miles from Lochearnhead we came to the beautiful village of St. Fillans, where we recollected the Queen of Holland and her daughter had spent a carefree holiday and where, we believe, not a few members of the veterinary profession have found rest and recreation.

We now followed the river Earn through a thickly wooded valley lying between high hills to the village of Comrie; situated in the highland fault, this village has experienced most of the earthquake shocks recorded in Scotland in recent years.

After Comrie the valley widens out and the route led us to Crieff—a town built in terraces on a hill overlooking Strathearn. Our route from Crieff to Perth lay along the northern fringe of this wide strath and we got many glimpses of this beautiful and fertile area before dropping down into the busy city of Perth, where a halt was made for tea. We were reminded that Perth is well known to the veterinary profession for its sales of pedigree Aberdeen-Angus and Shorthorn cattle as well as for Clydesdale horses. It is also famous for its large dyeworks, its distilleries and the headquarters of an insurance company of world-wide connection. Unfortunately, we did not have time to explore the city which in addition to its modern claims to fame is steeped in historical association. Leaving Perth we very soon gained the crest of Craigie Hill from which was obtained a magnificent view of the river Tay sweeping through the city of Perth round Kinnoul Hill on its northern bank to enter the Firth of Tay. Many of us could readily appreciate why Sir Walter Scott had compared the Tay, as seen from this vantage point, with the Tiber as seen from one of the hills of Rome.

Dropping down the southern side of Craigie Hill we came to Bridge of Earn and were reminded that the broad river we crossed there had its origin from Loch Earn at St. Fillans.

Two miles of flat, straight road brought us to the entrance to Glenfarg, through which the road winds and climbs, the glen being thickly wooded. At the top of the glen we passed the village of Glenfarg and were soon running through rich arable country.

We glimpsed the towns of Milnathort and Kinross and then saw Loch Leven, now famous for its trout fishing and the competitions organized there, but historically renowned for the imprisonment in and escape of Mary Queen of Scots from its island castle. The next part of our journey lay through the Fife coalfields, a strange contrast to the beautiful scenery through which we had passed earlier in the day.

Presently, after traversing the small town of Inverkeithing, we glimpsed the naval base at Rosyth and ran down on to the pier from which we embarked on the ferryboat to cross the Forth to South Queensferry. The crossing of the Forth lasted about 20 minutes and during the crossing we had the opportunity of taking in to the full the magnificent view afforded of the Forth Bridge. It is difficult to realize that this fine feat of British engineering is now over 50 years old.

Disembarking from the ferryboat on to the Hawes Pier at South Queensferry we saw the old Hawes Inn, immortalized by Robert Louis Stevenson in "Kidnapped." After climbing up the steep Hawes Brae under the approaches of the Forth Bridge we were soon speeding along the fine broad road to Edinburgh. This road skirts the policies of Dalmeny Park, famous for the herd of Aberdeen-Angus cattle belonging to Lord Rosebery.

And soon we reached Edinburgh again, after a day in which we had glimpsed a fragment of the scenic beauty of Scotland; though the day had been a long one, none of our company had wearied.

After this wonderful day in the country all were ready for the Victoria Benevolent Dance.

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Excursion to the Borders

In glorious weather a party set off from the College on what was of necessity a somewhat hurried tour of the Borders.

There was little time to linger or to do full justice to the many interesting features of this part of Scotland, famed in song and story, but the beauty of the countryside on such a lovely day captivated the visitors from overseas. The quiet serenity of Peebles, the sleepy but busy little towns of Galashiels and Melrose, the visit to Abbotsford, the home of Sir Walter Scott, to Dryburgh Abbey and Melrose Abbey, and the view of the Tweed from Bemersyde, flash back to memory as one writes.

The truly happy band which returned to Edinburgh, having had lunch and tea at Galashiels, will wish again to visit this countryside and recapture its history and romance and add to the store of impressions lingering as another happy memory of a successful Congress.

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The Royal Mile Tour

A party of about 75, members and friends, left the College by 'bus on Friday afternoon and proceeded by way of Buccleuch Street and Bristo Street to the George IV Bridge, passing on their way Greyfriars Churchyard, which contains the tomb of Boswell of Auchinleck where the National Covenant was signed in 1638, and, at the top of Candlemaker Row, the bronze figure of "Greyfriars Bobby," the little dog whose devotion to his dead master earned him a collar from a Lord Provost during his lifetime and a monument from a Baroness after his death. Passing by way of the Lawnmarket, up the Castle Hill, the party reached the Esplanade and alighting from the 'buses crossed the drawbridge and entered the castle, from the ramparts of which a panoramic view of Edinburgh and the surrounding country, including a glimpse of the Forth Bridge, was obtained. Here were seen the huge gun, Mons Meg—"that great iron murderer Meg"—as Cromwell called it; the half-moon battery from which the daily one o'clock gun is fired; St. Margaret's Chapel and many other objects of interest. A visit to the

dungeons followed, although a number of the visitors decided "to take them as read"; and finally the beautiful and impressive War Memorial—not less beautiful and not less impressive because of what has happened since it was established. The party were fortunate in having the company of Professor Russell Greig whose historical knowledge enabled him to make many interesting comments on what was seen. Thus, for example, he drew attention to a very beautiful allegory not generally known. In the Inner Shrine, the casket containing the names of those who rendered their lives reposes not upon the marble floor but upon a rugged outcrop of rock. This is the living rock of Edinburgh—the heart of Scotland—and the memory of these fellows is now clasped to their Mother's breast.

The party then passed along the Royal Mile to Holyrood Palace, noting much of interest on the way—the High Street, Parliament Square, the Mercat Cross, the Heart of Midlothian, John Knox's House, site of the Netherbow formerly dividing Old Edinburgh from the Canongate, and the Canongate Kirk Yard where James Clark, farrier to the King for Scotland and the Father of Veterinary Hygiene, lies buried.

A visit was paid to the White Horse Close where William Dick, the founder of the Royal (Dick) Veterinary College was born. Professor Greig, in a short address, drew attention to the salient features in the early history of William Dick and emphasized the importance of the place to Veterinary Science—a fact that was appreciated by veterinarians from all over the world. Passing along the Canongate, attention was directed to the Abbey Strand, the boundary of which is marked in the causeway; within the boundary debtors were wont—prior to 1880 when imprisonment for debt was abolished—to take sanctuary.

The visitors then passed from the Canongate into the fine palace yard which, "nestling at the knees of the mountain," forms an appropriate setting for the historic Palace of Holyrood House and her ancient Abbey.

Entering the palace the party were shown the Picture Gallery of which Scott was critical; but here Prince Charlie held court on behalf of his royal father and here are more than a hundred portraits of Scottish kings—many, alas, fictitious—and here, too, is the cast of the skull of King Robert the Bruce who won for Scotland her independence.

Lord Darnley's apartments, containing some ancient tapestries and several portraits, were entered next, and from these a staircase led to the apartments of Mary, Queen of Scots, which included the audience chamber, with its panelled ceiling containing the arms and initials of many royal personages and from the windows of which a most charming view of the surrounding country and of the town, was obtained. The party were next shown Queen Mary's bedroom, hung with tapestries portraying the Fall of Phaeton, and the Queen's supper room from which Rizzio was dragged on that fateful night of his murder.

The ruins of the Chapel Royal were inspected; and then through the kind offices of Professor Greig, special permission was obtained to visit the modern royal apartments: this was an altogether unexpected, but much appreciated, privilege—the handsome rooms, fine portraits and elegant furniture with their intimate association with our Royal Family, being much admired. By many it was felt that the "Royal Mile" afforded a highlight in a very bright week.

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Ladies' Visit to the Zoological Gardens

A visit to the Edinburgh Zoological Gardens was arranged by the Ladies' Committee and on Monday, July 28th, a cheerful party of more than 60 ladies spent a happy afternoon.

The visitors were received by the Assistant Director, Mr. Cunliffe, under whose helpful guidance particular interest was found in the latest additions to the collection—a large group of King Penguins from the Antarctic, and parties of flamingoes and ostriches from much warmer climes.

The Scottish Zoological Society, since their inception, have recognized the importance of maintaining their animals in as natural conditions as are possible and even the large carnivores such as the lions in their den and the wolves in their wood are so accommodated that they all have extensive range of freedom. It was learned with satisfaction that the Council of the Society is considering plans whereby the animals will be under constant veterinary supervision.

On a warm summer afternoon it might well appear that the lay-out of the Park is designed more for the welfare of the animals than for the convenience of the visitor, but a dainty and generous tea and the natural beauty of the Park helped to make the excursion not only worth while but eminently enjoyable.

V.V.B.F. Ladies' Guild Dance

The social events terminated with a most successful dance arranged by the Scottish ladies, and held at the Masonic Hall on the evening of Thursday, July 31st. The number present exceeded 300 and the proceeds resulted in the very satisfactory sum of approximately £174 7s. being raised.

The draw for the tray given by Mrs. Gofton and the luncheon set by Mrs. Mitchell took place. These two gifts made a very welcome and substantial addition.

During the evening, Mrs. Gould, who officiated in the absence of Mrs. Hancock, assisted by Mrs. Mitchell and Mrs. Gofton presented the Ladies' Silver Cup (Dunkin Golf Trophy) to Mrs. Andrew of Ware; and the Simpson Golf Trophy to Mr. A. M. Smith of Ayr.

In appreciation of her efforts on behalf of the Ladies of the Congress, Mrs. Russell Greig presented Mrs. Mitchell with a handbag and a bouquet.

The company very much enjoyed some dancing by four members of the Highland Brigade I.T.C., Redford Barracks, by kind permission of Capt. Lamb.

A cordial vote of thanks was accorded to Mrs. Grahame and those responsible for the organization of the dance.

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The Golf Tournaments

Though entries for both tournaments were received in so dilatory a fashion as to cause some perturbation to those responsible for this time-honoured feature of the social side of Congress, eventually a satisfactory "field" was obtained for each and many excellent games were played, in good conditions. The players were greatly indebted to Professor T. Grahame and Mrs. Gofton for organizing two thoroughly enjoyable outings with great efficiency.

The men's tournament over the Luffness Golf Course attracted an entry of 25 players, and was played off for the Simpson trophy on Thursday, July 21st. The day was glorious and the course as good as the day, while the lunch provided by the Club Master was excellent.

Mr. A. M. Smith won the competition with 73 net—a highly creditable performance—Dr. McEwen was runner-up with 74 net, while several followed with 75.

On the previous day the Ladies' Golf Competition was held over the course of the Liberton Golf Club. The ladies were favoured with excellent weather and enjoyed playing over this lovely little course. The Dunkin trophy was won by Mrs. Andrew, of Ware, with a net score of 75; Mrs. Coward, Kendal, being runner-up with a net score of 77.

POISONOUS PLANTS

"Three children, aged nine, eight and six, I see from the daily Press, have died in Barrow-in-Furness from eating a poisonous weed which, according to one paper, is known locally as dead wood and resembles a potato," writes "Onlooker" in *The Pharmaceutical Journal*, and in the course of his note continues: "What dead wood may be, I do not know (except in its nautical significance). Dead wort, or Danewort, I have heard of—it is the dwarf elder, *Sambucus ebulus*. The surprising thing is that more children are not poisoned in this way. . . . Country children, I suppose, have a protective instinct which is part of their heritage, but what about the town children, who (and it is about the only good thing which came out of the war) began to see something of the countryside eight years ago. Botanizing is now out of fashion and the herbarium competition has suffered a sad decline, otherwise it could be whispered that a right-minded apprentice might be worse employed than in making a collection of the poisonous plants of the locality, to be kept for reference purposes only.

"The number of really poisonous fungi in this country is smaller than most people imagine and most are so repellant that no one in his senses would touch them. Still, accidents do happen and one of the most deadly, the Death Cap (*Amanita phalloides*) is occasionally mistaken for the common mushroom. In France pharmacists are trained in mycological chemistry. Our syllabus, goodness knows, is already overloaded, and I would not suggest the imposition of any further burden on the student, yet such knowledge is undeniably useful."

The Veterinary Exhibition

The exceedingly well staged display of drugs, instruments and appliances for which the commercial houses who serve the profession were responsible, rendered the Exhibition Hall a most popular rendezvous for members throughout the week. The stands themselves had been attractively "dressed" and the products skilfully arranged for ready inspection.

The exhibition was opened by the President, Professor W. M. Mitchell, on Monday, July 28th, immediately following the formal opening of the Congress. The President was accompanied by Mrs. Mitchell.

The President said that his first duty in the Congress was to welcome those who supplied the tools with which the veterinary surgeons did their worst, and sometimes, he hoped, their best. He had not the slightest doubt that they would go away with many better tools than they had had before. There were drugs, instruments, literature and many other things which would lead to their better understanding of veterinary science and practice in the future. He would also ask the members to leave behind with the people responsible for the exhibition their ideas so that in future they would have better and better exhibitions. He had much pleasure in declaring the Veterinary Exhibition open.

Mr. Killpach, of Messrs. Cooper, McDougall and Robertson, presented a bouquet on behalf of the exhibitors to Mrs. Mitchell.

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THE STANDS

The stand of Abbott Laboratories, Ltd., Wadsworth Road, Perivale, Middlesex, featured Nembutal Veterinary Solution by means of a brightly coloured mural depicting a typical farmyard scene. Superimposed was a giant-sized hand with syringe. Two side panels illustrated Metaphen (Abbott) and Butyn (Abbott).

All the nembutal preparations were on display, including Nembutal-C, a calcium salt, more rapid in action than Nembutal.

Butyn (Abbott) was shown with a range of associated products including Butyn Metaphen Ophthalmic Ointment and Butesin Picrate Ointment. Butyn is particularly efficacious as a topical anaesthetic for all intact mucous surfaces. For operative work on the surface of the eye a 2 per cent. solution of Butyn applied topically has been found very satisfactory. For the removal of superficially placed foreign bodies and for the relief of pain and abrasions of the cornea several drops of a 2 per cent. solution are instilled. This penetrates so rapidly that operations may be started after one minute.

The Metaphen (Abbott) series included Metaphen Germicidal Solution (non-staining) for the cold disinfection of instruments, and also Tr. Metaphen.

Other products included Pentothal and the Abbott vitamin series, Penta-Kaps, Oladol Capsules, Nicotinic Acid, Thiamin Chloride, Ascorbic Acid and Brewers' Yeast.

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Armour Laboratories, 27-28, Finsbury Square, London, E.C.2: This well-known firm had an effective display of the following preparations, amongst others:—

"Glanoid" Proethron and Proethron Forte—Concentrated Liver Liquids for intramuscular injection.

"Glanoid" Pituitary Anterior Lobe Extracts, Physiologically Standardized:

Gonadotropic Factor—assayed potency of not less than 300 units (Collip) per c.c.

Growth Complex—assayed potency 100 growth units (Collip) per c.c.

Prolactin—assayed potency 100 International Units per c.c.

Polyansyn—a polyvalent extract having an assayed potency of 25 growth units (Collip) per c.c.

"Glanoid" Pituitary (Posterior Lobe) Extract. B.P. 1932.

"Glanoid" Spleen Extract 20 per cent. and 40 per cent.

"Glanoid" Suprarenalin Solution 1:1,000.

"Glanoid" Thyroid Tablets B.P. 1932 Grains 1/100 to Grains 5.

"Glanoid" Glycerine Extract of Red Bone Marrow.

Sterilized Catgut Ligatures and Sutures Plain and Chromic. The Armour Sutures are fitted with carbon steel eyeless needles.

Armour Pack Sterile Nylon Sutures.

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Arnold & Sons, 54, Wigmore Street, London, W.1: Once again Messrs. Arnold & Sons' Stand proved to be a great attraction to the surgeons attending. Their usual comprehensive range was exhibited, including the new McLintock's adaptor for teat syphons which aroused great interest.

Other items displayed were all kinds of teat instruments, diagnostic outfits, including the Coldlite Oesophagoscope for small animals, Transilluminators, etc., and obstetric equipment was well in evidence. Fully automatic sterilizers were of general interest. Dewar's Ecraseurs and Gray's Dog Gags made a welcome return after a lapse of many years. The new jointed Neilsen's Catheter suggested by Mr. E. Wilkinson also interested many surgeons.

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Bailliere, Tindall & Cox, 7 & 8, Henrietta Street, Covent Garden, London, W.C.2: In addition to the *Veterinary Journal*, for which more new subscriptions were asked for and recorded than at any previous exhibition, Messrs. Baillière, Tindall & Cox showed a wide range of veterinary books in which very great interest was taken.

Among new books and new editions were Hutyra and Marek's "Special Pathology and Therapeutics," fifth edition, edited by Professor Russell Greig; Blount's "Diseases of Poultry," which it is claimed will become the student's text-book on the subject; the third revised edition of Gaiger and Davies' "Veterinary Pathology and Bacteriology"; third edition of Lander's "Veterinary Toxicology," and Wright's "Veterinary Anaesthesia." New books and new editions in preparation included Kirk's "Index of Diagnosis" and the new "Index of Treatment" by the same author, which the publishers assert will prove to be invaluable books for the clinician.

Bayer Products, Ltd., Africa House, Kingsway, W.C.2, exhibited a selection of their comprehensive range of veterinary remedies, including sera and vaccines. The division into eleven sections, marked: chemotherapeutics, vitamins, remedies for skin diseases, mastitis, etc., greatly facilitated a study of the exhibits by visitors to the stand.

As on previous occasions, a section was devoted to recent introductions and restorations. The new products shown included Mastitis Vaccine No. 1 (a special vaccine for "summer" mastitis), "Deflammin"—a sterile bacterial filtrate for the local treatment of inflammations—Pneumonia Serum Equine, specially intended for the prevention and treatment of the secondary infections in equine influenza, "Prontocrine," a dusting powder containing "Prontosil" Album and "Dermacrine" as the effective ingredients, "Marprontil," a new sulphonamide, and "Obesil," a fattening agent.

A poster on the stand reminded members of the profession that the firm carries out bacteriological examinations for its clients and also prepares autogenous vaccines.

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British Glues & Chemicals Ltd. (Feeding Stuffs Dept.), 96, Bridge Road East, Welwyn Garden City, Herts.: Simplicity and cleanliness heightened the effectiveness of the display for Churn Protective Mineral Supplements.

A continuity pleasing to the eye was given by use of a cream back-cloth shaped into a curve, in which, centrally placed, was the familiar trade-mark—the letters B.G.C. imposed on a churn. Immediately beneath, in large, blue, cut-out letters, was the brand name "Churn," while large photographs showed clearly three alternative methods of feeding mineral supplements to cattle and sheep—open trough, hooded trough and bowls.

On either side of this central display were three blue panels lettered in cream, summarizing the principal uses of the six Protective Supplements.

The table across the front of the stand was draped in blue, and on its face bore a cream panel showing the Royal Warrant in gold.

An extensive range of literature supported the display, much of it the production of the company's Advisory Service. Leaflets produced by the Iodine Educational Bureau and the Mond Nickel Company, dealing with allied aspects of mineral nutrition for animals, were also displayed.

The current number of the company's monthly *Churn Bulletin* was on the table, with a particular interest for veterinary surgeons, as one of the main articles, "Friend, Adviser and Magician," dealt with the farmer's view of the profession.

Uses of the Protective Supplements were summarized as follows in the display:—

No. 101—For hypocalcaemic conditions — infertility — stunted growth—pine—swayback—in sheep.

No. 102—For conditions of hypomagnesaemia and hypocalcaemia in cattle and sheep.

No. 103—General purpose and anti-perosis supplement for poultry.

No. 104—Special supplement for stunted growth, rickets and anaemia in pigs.

No. 105—Fortified supplement for sub-oestrus and hypocalcaemic conditions in dairy cows and heifers.

No. 106—General purpose supplement for aiding growth, fertility and work output in horses.

British Oil and Cake Mills, Ltd., 2, Kingscote Street, London, E.C.4: The B.O.C.M. Ltd. were proud to exhibit at this year's Veterinary Congress, because their origin dates back to 1899 when 17 of the leading seed-crushing firms in the United Kingdom were amalgamated. B.O.C.M. Ready-Mixed Rations for cattle, sheep, pigs, horses and poultry are well known throughout the whole of the British Isles, but the profession may not be aware that the firm's Agricultural Service Representatives, all of whom hold degrees or diplomas in Agriculture, offer to their farmer customers an Animal Husbandry Service second to none. The field representatives of the Poultry Service Department are equally valuable to poultry farmers and the wide experience of both types of representatives has proved of great value to the agricultural community in obtaining the best and most economical results from B.O.C.M. feeding-stuffs.

The B.O.C.M. were responsible for the introduction of poultry pellets in this country and their experiences of them in the field at their own large Laying Trials at Hull, 1931-38, and again during the present season's Hen Battery Laying Trials at Stoke Mandeville, have given them an important lead in this branch of poultry nutrition.

Hundreds of chemical analyses of individual components and complete mixings are carried out annually in addition to scientific research and experiment at their several laboratories and farms. Special attention is paid to the incorporation of vitamins, particularly those of an unstable nature, and the inclusion of trace elements is always insured should there be any doubt that the normal mixings are low in the accessory food factors concerned. Helpful leaflets on technical aspects of dairy and poultry farming are constantly being prepared and revised and are proving particularly helpful to young farmers. A close link is at all times kept with the appropriate scientific literature and educational institutes throughout many countries of the world.

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Burroughs Wellcome & Co. (The Wellcome Foundation Ltd.), 12, Red Lion Square, London, W.C.1 and 18, Merrion Square, Dublin: Burroughs Wellcome & Co. took the unusual step of showing only three of their noted products. This enabled them to give considerably more detailed information about these preparations than is usual at exhibitions. The three, Penicillin Intramammary Injection, Luteinizing Hormone and Canine Distemper Prophylactics, were excellently reviewed in arresting charts and other forms of graphic representation.

Penicillin Intramammary Injection, an oil-wax suspension supplying 20,000 units of penicillin and contained in a small collapsible tube, is a recent development for the treatment of bovine streptococcal mastitis. Convincing charts prove that this dosage is ample for the destruction of both *Strep. agalactiae* and *dysgalactiae*. An arresting feature of this exhibit was a mounted section of a cow's udder with a tube of Penicillin Intramammary Injection inserted in the teat to show that the suspension diffuses rapidly throughout the quarter. Although lack of tubes has not so far allowed the commercial issue of this most practical product, B.W. & Co. hope to be able to supply it soon.

The section devoted to luteinizing hormone gave a clear picture of the importance of this substance. Luteinizing hormone, one of the secretions of the pituitary gland, is responsible for the initiation of ovulation and the formation of corpora lutea in the female, and for stimulation of interstitial cell tissue in the male. Its lack causes infertility in both sexes, and gives rise, in the female, to cystic ovaries and nymphomania.

In the Canine Distemper Prophylactics section, typical temperature charts of infected dogs and of dogs undergoing courses of immunization with either vaccine-virus or virus-serum, were shown. Emphasis was laid on the fact that dogs immune to distemper are not protected against encephalitis due to other causes. Tables and enlarged photographs of brain and lung sections illustrated the difference between the different types of encephalitis.

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Cooper, McDougall & Robertson, Ltd., Berkhamsted, Herts: The firm of Cooper, McDougall & Robertson, originally established in 1843, has specialized for over a century in the production of preparations for the control of parasites of livestock. The use of derris as an insecticide was pioneered by this organization, and they were also the creators of A.L.63, the anti-louse powder supplied to all H.M. Forces during the war, besides being the original processors of D.D.T. products in this country.

On their stand at the N.V.M.A. Congress, a range of parasiticides specially prepared for members of the veterinary profession was exhibited. These included an Anti-Sarcoptic Dressing; a Derris Skin Dressing; a D.D.T. Parasitic Dusting Powder; a canine anthelmintic; Phenothiazine Dispersible Powder, and a preparation of Hexachlorethane for the control of fascioliasis in cattle. A feature of this range is the double wrapping of the smaller containers, permitting the outer label to be detached to reveal a plain label bearing brief directions only, thus giving the package the character of a surgery-dispensed prescription and making it suitable to be handed direct to the practitioner's own clients. A micro-projector showing subjects of helminthological interest was also included in the exhibit.

Some indication of the work of the Cooper Technical Bureau was also given, and of the various sections in which this is organized—Chemical, Biological, Bacteriological, Field Research, etc. Mention was also made of the Faeces Testing Service operated at the Cooper Field Research Station, whereby faecal samples can be examined for worm eggs, should positive confirmation of a diagnosis of helminthiasis be required.

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W. & J. Dunlop, Ltd., 18, Bank Street, Dumfries: The main feature of this exhibit was that of "Gammexane" in dust, spray and smoke generator form with photographs of the very many types of insect pests which "Gammexane" is active against. Their own products, Blood Fibrinogen and Special Feeding Bone Meal were also displayed; also "Sandilands" Trace Element Mineral Mixture for use in deficiency diseases of animals. Vitamin A injections for the treatment of calf scour were also shown.

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Evans Medical Supplies, Ltd., Speke, Liverpool, 19: Though no special item was featured, a wide range of Evans veterinary products was displayed, together with technical literature. The products shown included a number of Evans veterinary sera and vaccines for lamb dysentery, louping-ill, swine erysipelas and many other diseases. Speciality preparations included Coletyl (carbamylcholine chloride), Diarsin (an arsenic preparation for injection), Malagride (acetarsol), Marsan (neoarsphenamine), Pirevan (a specific for red water in cattle), Retaquin (for the retained placenta), Streptocide (Sulphanilamide—Evans), Sulphaguanidine (Evans), and Zant (antiseptic).

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The stand of Messrs. C. J. Hewlett & Son, Ltd., 35-43, Charlotte Road, London, E.C.2 and 48, Carstairs Street, Glasgow, S.E., had a very interesting and comprehensive display of drugs, veterinary injections and specialities, bougies, instruments, etc., which was visited, not only by practitioners in the United Kingdom, but by representatives of the veterinary profession from France, Belgium, Egypt and the Sudan.

Interest in the old, well-tried specialities, such as "Parophyroxia," for colic impaction in horses, "Myroxline," for mange and ring worm, and "Mist. Tussis Bruacso," a cough mixture for horses, was as great as ever and the more modern preparations, "Sarcogen," an effective lotion for all forms of mange and for the destruction of lice, etc., and "Hewsol," a powerful, non-poisonous germicide, were well received by veterinary surgeons from all parts of the country. Particular attention was paid to the "Neo-Injector," an apparatus specially devised for the administration of calcium borogluconate and other solutions of large bulk.

Prominent among the injections were Manganese Butyrate, for interdigital cysts in dogs, Carbamylcholine, for cases of impaction of the caecum and colon, and "Anaesco," an oil-soluble anaesthetic. Elixir Hormonigen has been proved to be of value in the treatment of bronchitis, asthma, etc., in dogs, whilst Hormonigen Tablets have met with considerable success in sterility in cattle. Practitioners in Scotland and the North of England were interested to hear that Messrs. C. J. Hewlett & Son, Ltd., had opened recently at 48, Carstairs Street, Glasgow, S.E., a factory for the manufacture of their specialities and for providing an improved service to clients living in that district.

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Holborn Surgical Instrument Co., Ltd., 15, Charterhouse Street, Holborn Circus, E.C.1, exhibited a comprehensive display of Veterinary Instruments of all kinds. In addition to the familiar types of instruments and equipment the following novelties were on show:—

Hall's Trifin Teat Instrument.
McLintock's Teat Tube with ball valve.
The "Columbus" Medicated Teat Plugs.
Plastic Horse Stomach Tubes.
The Holborn Tattooing Forceps in new light-weight rustless alloy.
Conn's Cuff attachment for Russian pattern Artificial Vagina.
The Holborn Metal Pump for use with insemination pipettes in place of glass syringes.

The firm have recently moved into new premises at 15, Charterhouse Street, and members are cordially invited when in London to visit the showrooms which will be opened shortly.

Imperial Chemical (Pharmaceuticals) Ltd., 89, Oxford Street, Manchester: The central feature of the Imperial Chemical (Pharmaceuticals) Limited display took the form of the "tree" of scientific research, with its "roots" depicted as embedded in the varous pharmacological and biological laboratory processes, which were presented by a series of photographic scenes of scientific activity. The keynote of the exhibit, in short, was "Research in the Development of New Drugs." Also on display were a series of four coloured anatomical drawings of the horse, cow, pig and dog, which were specially commissioned for the exhibition.

Each drawing was associated with a list of disease conditions in the individual animal showing the site of occurrence of the disease and the name of the Company's products recommended for its treatment.

Among the products on display familiar to veterinary surgeons were "Sulphamezathine," "Tetmosol," "Avlon" brand Penicillin preparations, Hexachlorethane and "Diaquone."

Literature on the full range of the Company's products was available at the stand, as well as a booklet on Penicillin in Veterinary Practice, summarizing the main indications in veterinary medicine.

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Pharmaceutical Specialities (May & Baker) Ltd., Dagenham displayed a wide range of M. & B. Products for the veterinarian. As in previous exhibitions, these were grouped conveniently into sections for sulphonamides, pencillin and its preparations, propamidine and its preparations, anaesthetics, barbiturates and such individual specialities as the laxative and purgative "Altan" and "Tegeron" brand obstetric cream. On display were two new sulphonamide preparations recently introduced by M. & B., "Solu-thiazole" brand neutral soluble sulphathiazole derivative and "Solupyridine" brand neutral soluble sulphapyridine derivative, of particular value in the initiation of sulphonamide therapy in animals. Among the special packings designed for the veterinarian were a screw-cap pack of "Soluthiazole" for use in the treatment of caecal coccidiosis in poultry and a "single injection" pack of the sodium salt of sulphapyridine ("M. & B. 693 Soluble") for the specific treatment of "foul-in-the-foot" in cattle. Among the various sections Propamidine Intra-Uterine Injection for the treatment of sub-acute and chronic metritis in cows and "Intraval Sodium" brand of soluble thiopentone, a powerful intravenous anaesthetic for operative procedures of short duration, held special interest. A useful range of penicillin preparations and of barbiturates for use in many veterinary indications also aroused favourable comment.

Booklets on M. & B. Products for the Veterinarian (available to the profession only) included completely revised literature on the sulphonamides and a new edition of the M. & B. Veterinary Price List.

Reckitt & Colman Limited, Hull and London (Pharmaceutical Department, Hull): Dettol preparations were displayed on a stand specially erected by Messrs. Reckitt & Colman, Ltd. The scheme of decorations was arranged to blend with the display of Dettol bottles and the silver sword, the trade-mark of Dettol, was featured. Dettol preparations were on display as follows:—

Dettol Antiseptic. Dettol is non-poisonous and non-staining. It is an excellent deodorant. It retains its germicidal efficiency in the presence of blood, serum and pus. Dettol is gentle on tissue and therefore can be used in concentrations which permit of a wide margin of safety. It is recommended for the prevention and treatment of septic conditions, abscesses, wounds, etc., for disinfection during calving; for disinfection of instruments and hands; routine washing of cows' udders.

Dettol Obstetric Cream. This consists of 30 per cent. Dettol in gum tragacanth and is intended for disinfection of the attendants' hands and gloved hands and for general application during parturition. It is water soluble.

Dettol Ointment. This preparation contains the active germicidal ingredient of Dettol in a base of moderate greasiness. It has given good results as an antiseptic udder salve.

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Mr. James Thin, Bookseller, South Bridge, Edinburgh: Considerable interest was shown at the Congress in the recent American veterinary books displayed by Mr. James Thin, particularly the following: Little & Plastridge, "Bovine Mastitis"; Jull, "Poultry Husbandry"; Jull, "Successful Poultry Management"; Wolcott, "Animal Biology."

British books which attracted attention were: Boddie, "Diagnostic Methods in Veterinary Medicine"; Harvey & Hill, "Milk Production and Control"; Lander, "Veterinary Toxicology"; Gaiger & Davies, "Veterinary Pathology and Bacteriology."

It was noticeable that the display of books was much appreciated, especially by those veterinary surgeons who live in country districts and who do not have ready access to bookshops which cater for their needs. Sales were very good, and some valuable contacts made which should prove useful in the future.

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Messrs. Willington Medicals, Ltd., Alpha Laboratories, Whitchurch Road, Shrewsbury: This firm is the only one supplying veterinary surgeons exclusively. On their stand was noted a complete range of Phylax Sera and Vaccines, for which they are selling agents, and a complete range of packed products for the busy practitioner.

Amongst the better known of their products are "Mycosan" (non-specific therapy), Elixir Chelidon Co (diuretic), Willcain (local anaesthetic) and Willenol (antiseptic). A new product gaining popularity is Vico—a lubricant in powder form for use in obstetrical work, which removes all odour from hands and arms and is powerfully antiseptic. "Pirpas" (Dimethyl Quinolylmethyl Sulphate Urea) is another of their products, for use in redwater.

All veterinary products of Imperial Chemical Pharmaceuticals are kept in stock, and this firm are probably the largest packers of sulphonamide and phenothiazine to practitioners' requirements.

The motto of the firm is "Let us know what you require and how you require it packed and labelled and we will do the rest."

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Willows, Francis, Butler & Thompson, Ltd., 73, 75 & 89A, Shacklewell Lane, London, E.8: Having a corner position, the firm was able to show on one side, drugs, pills and tablets, which were colourful and attractive to the eye and evoked many appreciative comments from the visitors, whilst on the other side were displayed sera, vaccines and instruments.

Their representatives at Congress report that many of their old customers paid them a visit, together with prospective new ones, while they had many enquiries about their products from Colonial and foreign visitors. Great interest was shown in the Provost Embryotome, again available in this country.

The display at Congress proved successful from the business standpoint and afforded a valuable opportunity of meeting business friends both old and new.

SIMPLIFYING ADMINISTRATION OF PENICILLIN

Attempts to simplify the administration of penicillin were described by Sir Alexander Fleming when he opened a discussion on penicillin and streptomycin at the International Conference of Physicians recently held in London.

As penicillin was rapidly excreted by the kidneys, he said, the supply had to be renewed constantly. Many attempts had been made to prolong the exit and diminish the number of injections. Absorption of the drug had been slowed down by the simultaneous use of adrenalin, by the application of a tourniquet to the limb nearest the site of injection, and by the incorporation of penicillin in an oil-wax mixture. With the use of this mixture a therapeutic level persisted in the blood 24 hours after the injection.

Technical difficulties in injecting a semi-solid substance were being overcome by the preparation of a fluid which could be injected without difficulty. Excellent results had been obtained with a single daily injection of 500,000 units in watery solution, and this might prove to be the most popular method of administering the drug. In the ordinary sense it was impossible to give an overdose of penicillin. It was, however, a good thing that the Penicillin Act prevented its sale, except on prescription.

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The King gave permission for twelve pit ponies to be quartered in the Royal Mews at Buckingham Palace for six weeks, during the exhibition "The Miner Comes to Town," which the Prime Minister opened at Marble Arch recently. There are about 23,000 ponies in British pits, 11,000 of them in the Northumberland and Durham area and more than 5,000 in South Wales.

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Fly-free cattle fan out in the pasture and graze till they are full, then lie down contentedly and put on extra weight and bloom. Feeder steers that were sprayed with DDT put on up to one-half pounds of gain per day more than comparable steers that were not sprayed. An extra gain of 125,000,000 pounds is a conservative estimate of the result of cattle spraying in just two states—Kansas and Oklahoma in 1946.—*From report of the National Livestock and Meat Board.*

The Closing Meeting

(Adjourned Annual General Meeting)

Induction of Mr. L. G. Anderson as President

The Adjourned Annual General Meeting (the closing meeting of Congress) was held on Friday, August 1st, 1947, at the Royal (Dick) Veterinary College, Edinburgh, with the retiring President, Professor W. M. Mitchell, in the chair for the first part of the proceedings.

Professor W. M. Mitchell: That morning he had the very pleasant task of introducing to them their new President, Mr. L. Guy Anderson. Before he passed on the mantle he would like to say that he had been very proud to hold the post in which they placed him. He felt he had done very poorly, but the work of the Association had been excellent and that was what one expected. Professor Mitchell continued: "In the new President you have a man who has youth in his favour—he is the youngest President this Association has ever had—and to-day we need younger men who are capable of hard physical work.

"Mr. Anderson is a man who is used to running about the world. He was born in a place of rush—London. London was not large enough for him so he went to the Agricultural College at Reading, these little islands were not sufficient for him and he passed to the big Dominion of Canada, he swept the prairies and then entered our profession through the College at Toronto where he obtained his degree. The world was still not large enough for him but the centre of this great commonwealth of nations, his birthplace, again attracted him, so back he came to London and entered the Royal Veterinary College. After graduating there he went to Aylesbury, and has now one of the largest practices in the south. He is one of our most successful practitioners and a very shrewd man, just the type of man we want to guide the fortunes of the Association.

"You heard him speak at the dinner the other night and I am sure that we in Scotland appreciate that a man of such wide interests and contacts is the very man for this Association at such a time as this. If I may give a little advice to a young President, it is to try to bind up the friendships of this world a little more in Europe and amongst ourselves.

"He has a task before him which may bristle with difficulties, as it has this year, but with his drive I hope, when he comes to the Congress at Southport next year, he will be able to report that everything in our own garden is smiling and beautiful. If he also brings monetary acquisitions to the profession, well and good, but if events do not turn out as he would wish he at least knows that he will be going among a very friendly people who will welcome him in the same spirit as I have been welcomed in Scotland.

"I have met his wife and I know that Mr. Anderson has someone to help him, and I can assure him that the Lady President plays a very important part in his year of office, particularly at such a time as this. The same goodwill will go to Mr. and Mrs. Anderson as has gone out to my wife and myself.

"I have much pleasure in bringing before you Mr. Anderson and along with you promise that we will do our best to make his year a real success." (Loud applause.)

Professor Mitchell then invested Mr. Anderson with the gown and badge of office of President of the Association.

Mr. Anderson: "I do not find it very easy to speak to you at this moment. I sure you will understand that this is perhaps the proudest moment of my life. The ceremony with which a President is inducted is a simple one, but one which I think is symbolic. Two emotions which must strike a new President immediately, are, firstly, one of happiness that his colleagues should place such confidence in him as to appoint him to such high office. I still cannot quite understand why in such a large association I have been selected, but I can only assure you that I am deeply grateful for the kind way in which Professor Mitchell has introduced me to you, and very conscious of the honour that you have done me. The second emotion which must strike me is one almost of awe at the tremendous responsibilities which go with the honour of this post, responsibilities not merely to ourselves as individuals, but to the Association, the whole profession, and, indeed, to the whole country. Professor Mitchell has referred to my youth, he was kind not to refer to my inexperience.

"I am a believer in giving youth an opportunity but I am not so presumptuous as to believe for one moment that youth will be able to take full advantage of opportunity without the help and the guidance and sometimes the restraint of experience, and were it not for the knowledge which I have of the number of more experienced men in this Association, of those who have been through the Presidential Chair, who have been Chairmen of Committees for many years, did I not know that I should have their help, then I assure you that I would approach my duties with fear and trembling.

"I would like to take it further perhaps. The last year has proved to us all beyond doubt that we not only have the help and guidance of our elder statesmen but we have the loyalty and support of every member of this Association throughout the length and breadth of the land. I think that Professor Mitchell has shown wonderfully good taste in avoiding all controversial and political subjects in this Congress and I do not wish to end it on a note of controversy, but at the same time one must realize that this is not only the end, but the beginning, of a year and, therefore, I think it is perhaps meet that we should consider for one moment some of the problems which immediately confront us.

"To my mind there are primarily three: veterinary education is a subject which has been before us for a long time, changes are in process of taking place and we do feel that perhaps great changes and decisions will be made during the coming year. The veterinary profession I think has to its credit the fact that throughout its history the subject of education and training of its future members has been one of the greatest interests of all its present members; it does, therefore, behove all of us to take a special interest in the changes which are about to take place.

"Another important point with which we shall be faced during the next few months is possible legislation to control unqualified practice. Naturally this is, in part at any rate, the duty of the Royal College of Veterinary Surgeons and we must be quite sure that we do not in any way encroach upon their proper rights and privileges; at the same time the control of unqualified practice is without doubt a political issue and one which affects the everyday life of the veterinarian and it is our bounden duty to take an interest in this matter.

"The third point which faces us is our dispute with the Ministry. I did not wish to say anything on that point this morning. It is an unhappy topic, a very unhappy topic, to think that a profession such as ours is unable to reach agreement with that Ministry in the Government with which it is vital to work in the closest co-operation. But an event has occurred which makes it necessary to make reference to this matter. A question was put in the House and the answer given by the Minister was, in my view, most insulting to this Association. He not only accused us of seeking to 'organize a boycott of my Department's efforts to recruit an adequate staff' but also to have 'misrepresented the facts in material respects.' That answer, naturally, will be reported in the Press and if it goes into the Press that we, as an Association, have materially, in material ways, misrepresented the facts to our members, it is a public accusation which must receive a public answer. We have, as an Association, stressed time and again, that we wish to co-operate to the full with the Ministry of Agriculture, and with any other body in the interests of animal health. I repeat that here and now on your behalf: that it is our wish to co-operate to the full. ("Hear, hear.") But we cannot, either individually or collectively, offer of our best when our men receive a status which gives them a sense of frustration and dissatisfaction—men cannot offer of their best under such circumstances. We were told at the annual dinner that veterinary science was an instrument of social value and it is therefore up to us to see that that instrument is wielded to the best possible advantage.

"Under these circumstances I should say here and now that we have never misrepresented the facts, we have never refused to co-operate with the Ministry in any way and in fact we have done so during the last year in spite of their statement that a state of non-co-operation exists between us. I will repeat, that we are prepared to meet the representatives of the Ministry immediately to discuss ways and means of overcoming this regrettable impasse—but it is not only a matter of policy, it is our bounden duty not merely to ourselves but to the livestock industry and to the whole community to continue this battle with the utmost of our power. That I honestly believe, and our greatest weapons are our unity and our determination, and I am quite satisfied that we have those two weapons in our armoury and we shall use them continually.

"I will uphold to the utmost of my power any decision of Council. I consider it my duty not to offer my opinions but to be guided by Council and it is my earnest hope that during my year of office some of these controversial topics may be settled; particularly I hope that I may be fortunate enough to see a willingness on the part of the Government to establish those conditions which the profession has clearly indicated are essential to the vigorous prosecution of an active policy for animal health with the consequent reduction of risk to the community and raising of the standard of human nutrition.

"Once again I would express thanks for the very kind way in which Professor Mitchell introduced me. I thank you, ladies and gentlemen, for the honour that you have done me, and I assure you that I shall do my utmost to shoulder the responsibilities which you have placed upon me." (Applause.)

Vote of Thanks to the Retiring President

The PRESIDENT (Mr. Anderson): The first duty of a new President was a very pleasant one and one which he could do with the 3,000 members behind him, and that was to express the thanks of the Association to their Immediate Past President. They knew that Professor Mitchell had worked under difficult conditions—to be Principal of that College and President of that Association at the same time was an extraordinary difficult position to be in and although Professor Mitchell said that he had done very little, that was very far from the truth. He had done a very great deal. (Hear, hear.) He should hate to think of the man hours spent travelling from Edinburgh to London on the Association's behalf, and without wishing to prolong those proceedings unnecessarily, he would like to propose to Professor Mitchell a very hearty and very sincere vote of thanks for the work he had done for the Association during the last year.

The vote of thanks was accorded by acclamation, and Professor MITCHELL made a brief response.

Speeches by Foreign Delegates

The PRESIDENT then invited some of the foreign delegates to address the Conference. Each delegate was loudly applauded as he came forward and again as he resumed his seat.

Professor LIEGEOIS (Union Vet. Belge) said that on behalf of the Government of the Belgian Congo he was very pleased to say a few words of thanks to the President and to the members of the Association. He appreciated very much the privilege of attending the Congress which had been most interesting and enjoyable. He presented his good wishes to the veterinary profession of this country and hoped for it more progress and success.

The PRESIDENT asked their Belgian colleagues to take back to their own country the warmest good wishes of the veterinary profession of Great Britain.

Professor BRESSOU (Principal, L'Ecole Vétérinaire d'Alfort) addressed the assembly:

"Mr. President, ladies and gentlemen: I beg your pardon for not being able to speak English." Proceeding in French, Professor Bressou said: "First I would like to record my gratitude to the N.V.M.A. for having last year accepted the invitation to be represented at the centenary celebrations of the Academie Vétérinaire de France. We were then very glad indeed to welcome your President—Professor Mitchell—and thus to strengthen our professional contacts—so sadly interrupted during five hard and dismal years.

"It is a great pleasure to attend your Annual Congress. In bringing to you messages of goodwill from the Academie Vétérinaire de France and from the Alfort Veterinary School, may I be permitted to recall our common sacrifices made for the safeguard of our national liberties and to express to you our very deep gratitude for the decisive help which your country has given to France during these very critical years.

"Because of the high regard and esteem with which your Association is held we were glad to respond to your invitation to attend your annual congress. We, in France, are regular readers of the *The Veterinary Record*; we follow with great interest the work of your excellent research centres in the development of better methods and techniques. We deeply admire the success of Britain's agricultural efforts, especially in the field of animal husbandry where your association has succeeded in getting recognition—a success which for us is a very encouraging example.

"This Congress has been of the greatest interest. I have enjoyed the various reports with the discussions that followed, the most instructive demonstrations and the perfect organization, all of which explain the brilliant success of this year's congress.

"I have been deeply touched by your welcome. Scottish hospitality is proverbial and to-day I can certainly confirm its reality from my personal experience of your many kindnesses and generosity. I owe it to you that I have made acquaintance with this lovely city of Edinburgh, its numerous historical features, its architectural and artistic treasures, its surrounding countryside with the Highlands and their lochs.

"At your annual meeting, on Wednesday, I was struck by the scope of the problems under discussion. Most of these problems also confront us in France. We also have to fight against the dangerous and unwarranted interference of external elements and our Ministry of Agriculture is no more helpful than yours. A similar state of affairs is to be found in other countries and this would suggest the desirability of a comparative study of the various national organizations, their present status and their aspirations.

"Next year we shall be re-starting at the Alfort Veterinary School the "Journeés Veterinaires," a regular event in pre-war days resembling closely your annual congresses. We heartily invite you to come over in force. We shall be glad to receive your President, Mr. G. Anderson, to whom we would express the feelings of friendship, esteem and brotherhood which you so kindly bestowed on me during the last few days."

Dr. H. PLUM (Danish Veterinary Association and Honorary Member, N.V.M.A.) said that he was very happy to have the opportunity of thanking the Association for its kind invitation to attend the Congress. When he was coming over he hoped to see something very nice and he was not disappointed. It had been very pleasant to meet his friends, the papers had been very interesting, the exhibitions and demonstrations very instructive, and last, but not least, the hospitality shown by the Royal (Dick) Veterinary College was second to none.

Dr. G. M. VAN DER PLANK (Veterinary School, Utrecht) said that last year in Paris he met Professor Mitchell for the first time and felt that he must be one of the most reliable people in Scotland. He was greatly struck by the way in which he spoke of the unification of the profession in other countries and of the cementation of relationships with other countries. He was therefore very glad when his Association appointed him as delegate to this successful congress. He was glad to accept the invitation because personal contact between veterinarians in the several countries was of the utmost importance. One could see, through *The Veterinary Record*, what was happening in several countries and especially in Great Britain. The Dutch veterinarians had followed the struggle of the British veterinarians with great interest and he wished them success in their fight because it would be of great importance in all other countries. He would also remember the contact between the different countries in this congress. Before the war there was much contact between the countries. After the war—there was no time to go into details—his country thanked the English nation for all they had done in the most dangerous times under the leadership of Winston Churchill, for the hospitality given to their Queen and Royal Family, and all that had been done for the population since the war ended.

This was one of the congresses which he had enjoyed most; the meetings and the discussions were of a high standard and he hoped that in the very near future he would be able to extend an invitation to attend a congress in Holland, thus making contact between members of the profession still closer.

He would thank the members personally, especially the ladies, for their friendliness and their warm welcome.

Professor KARL ERIKSSON (Veterinary School, Stockholm) said that it gave him great pleasure in the name of the Swedish Veterinary Association to express his gratitude for the invitation to send a delegate to this congress. It was received with the greatest interest and his organization would try to play its part in the establishment of closer connections in the veterinary field between the two countries. Swedish veterinarians could not do so much for Britain as Britain had done for Sweden, but they would try to do what they could. He hoped they would be able to repay some of all he had seen and learnt during his stay.

Personally, he would thank the members for their kindness and for the hospitality which seemed to be endless. This was the first time he had been in Scotland and he had never had such a feeling of being at home as he had this week in Edinburgh.

Professor ANTON BRANDT (Veterinary School, Oslo, Norway) said that from the Norwegian Veterinary Association he conveyed cordial greetings and thanks for the kind invitation to this congress. He had never been in Great Britain before and felt it was rather daring of him to address the Congress in his poor English, but at least he could say that his sentiments were sincere, even if badly expressed. The Norwegians had ever been inclined to turn their eyes to the west, and especially after the last war they felt themselves linked to Great Britain with very strong bonds. Every day and every night their gaze was directed to their ally in the west in eager anticipation; every day and every night they listened to the news from the B.B.C.; every day and every night their thoughts and wishes went out to Great Britain who they knew in the end would free Norway from tyranny. The Norwegians learned to regard the people of Great Britain as their brothers and sisters: "Your battle was our battle, your defeats also ours, your victories were our

victories and your hurts, our hurts. Never has Norway been so closely bound to Great Britain as to-day and this congress will help to make still stronger the ties which unite us." Norway would never cease to look towards the west for freedom and justice and in this hope he would express his best thanks for those interesting, wonderful and happy days in Scotland which was the home during the war of so many Norwegian soldiers.

The PRESIDENT told the delegates from abroad how very proud the Association was to have had their company and the contribution that they and their ladies had made to the Congress. He would borrow a phrase from Bailie Turnbull and say, "Haste ye back."

Votes of Thanks

The PRESIDENT: They had enjoyed a wonderful week in Edinburgh and it was right that they should close the proceedings with some expressions of thanks. Congress did not just happen, it was planned and worked for very hard. Things did not just go on as happily and as efficiently as they had that week unless they were extremely well organized behind the scenes. The first vote of thanks to be recorded was to the Corporation of the City of Edinburgh for according a Civic Welcome and a Civic Reception to the Association. He would also say a word of thanks to the Scottish Metropolitan Division for the informal At Home held last Sunday evening. It was a happy augury for the Congress. (Applause.)

Mr. G. N. GOULD proposed a vote of thanks to the Board of Management of the Royal (Dick) Veterinary College for providing the accommodation for the various meetings of Congress, the exhibition of surgical instruments and drugs, and the various demonstrations. Included in the vote of thanks was the staff of the College, particularly those who did such wonderful work in the catering arrangements. Many of those who had attended to the comfort of members were members of the laboratory staffs and other technical staffs who had very kindly consented to act as waiters and waitresses, and in other capacities. The job was done as a team but he would specially mention Professor Grahame for the great part he played in many of the arrangements made. The Congress could not have been held without the facilities provided by the Board of Management. (Applause.)

Mr. T. L. WRIGHT wished to propose a vote of thanks to a long list of people and organizations without whom there would not have been a Congress. Each and all in their respective spheres had contributed very greatly to the enlightenment and enjoyment of all those who had attended the Congress. The list included readers of papers, the openers of discussions, operators and demonstrators, chairmen and recording secretaries of meetings, directors of the Animal Disease Research Association and Dr. Greig for the privilege of visiting the Moredun Institute, the Corporation for giving permission for a visit to the market and slaughterhouses and for the hospitality provided there; also to the abattoir manager and the veterinary officer, and to the secretary of the Zoological Society for granting facilities for the ladies' visit to the zoo and for their hospitality. (Applause.)

Capt. J. R. BARKER thanked the Provisional Committee on behalf of the members for organizing the Congress, and especially the chairman, Mr. Ritchie, and the local secretary, Dr. Robertson. The other members of the Committee had done as much to make this Congress a success, and its success was a measure of the members' tribute. (Applause.)

Presentation to the Local Secretary and Mrs. Robertson

The PRESIDENT said he knew how sincere was that vote of thanks, and he knew a little of the work that was done. Technically, of course, the officers were members of the Provisional Committee (he was afraid he was member *in absentia*). The work which was done was really tremendous. While each and everyone of the members of the Committee pulled their weight and it was perhaps invidious to pick out individuals, yet they all knew that the key man of any committee was the secretary. It was therefore a privilege and a very great pleasure to ask Professor and Mrs. Robertson to accept small gifts from the Congress as a token of appreciation for all that they had done.

The President then presented a clock to Professor Robertson and a handbag to Mrs. Robertson amid cheers and applause.

Professor ROBERTSON said that he found it difficult to express his feelings, partly possibly because of the aftermath of an Alumnus Dinner, partly because they were a mixture of relief and regret—relief that it was all over, mingled with regret that the many friends he had made during Congress week would soon be departing. So far as the success of the Congress was concerned, he personally had done very little compared to the work done by many others. It was obvious that everyone on the College staff from the cooks in the basement to the artists in the attics had done a tremendous job of work. He was most fortunate also in having an exceptionally helpful Provisional Committee, the members of which deserved the bulk of the credit for what had been done. While it might seem invidious to mention names, he would like to express his appreciation of the help given by the chairman, Mr. J. N. Ritchie, whose tactful handling of the meetings had smoothed out many difficulties, and by Mr. Arthur Gofton, who had been a tower of strength and a fount of wisdom in all matters connected with the Congress. He would also like to pay a tribute to the work done by the staff of his department who had kept it running for many weeks without more than an occasional glimpse of their professor. He felt that by now they must be wondering if a professor was really necessary! In the same way, he was afraid that his wife, who had seen little of him between breakfast and midnight for some considerable time, would be beginning to wonder whether or not a husband was really necessary! But perhaps those gifts which members had so kindly donated would help in restoring him to her good graces. On behalf of Mrs. Robertson and himself, therefore, he would thank them very much for their tokens of appreciation.

Mr. J. N. RITCHIE thanked the Ladies Committee very sincerely for their co-operation in the organization of the social contacts of the Congress; Mr. E. R. CORRIGALL proposed a vote of thanks to the Committees of Management of the Liberton and Luffness Golf Courses for according the members the privilege of playing there, and Dr. W. R. WOOLDRIDGE paid a tribute to the Press for their co-operation and help in reporting the proceedings.

The PRESIDENT said that there were not any matters arising during Congress which should be discussed, nor were there any specific resolutions and they were now at the end of the Congress business.

As one final word and one final vote of thanks he did not think they should depart without a word of appreciation to Professor Mitchell and Mrs. Mitchell, and the Misses Mitchell for being the guiding lights all the way through the Congress. (Loud Applause.)

He now declared the Congress to be closed.

V.V.B.F. Ladies' Guild

ANNUAL GENERAL MEETING

The 16th Annual General Meeting of the Ladies' Guild was held at the Royal (Dick) Veterinary College, Edinburgh, on Tuesday, July 29th, 1947, at 11 a.m.

There were present: Mrs. G. N. Gould (in the chair), Mesdames Anderson, Barrett, Boddie, Steele-Bodger, Bannatyne, Grahame, Gofton, Gordon, Holroyd, Kennedy, McQuaker, Magowan, J. Mitchell, H. L. Mitchell, Nicholson, Oliver, Penman, B. J. Powley, M. A. Powley, Robertson, Stewart, Snaith, Sangster, Skinner, Thomson, Wright, W. R. Wooldridge, Wilkinson and the Hon. Secretary, Mrs. R. E. Glover.

In opening the meeting Mrs. Gould read a message of apology for her absence from Mrs. Hancock, the President, who wished the Congress every success and hoped the Guild would have a very good meeting. The minutes of the 15th Annual General Meeting, which had been published in *The Veterinary Record*, were taken as read and signed as correct.

Annual Report and Financial Statement

The annual report for the year 1946-47 and statement of accounts were submitted and adopted. The Hon. Secretary reported apologies for absence. Correspondence was dealt with and a hearty vote of thanks was proposed to Mr. Steele-Bodger who had so generously provided large quantities of envelopes for the Guild, at a time when these were very difficult indeed to obtain—it was a very great help. The very satisfactory balance of £556 9s. 4d. was ample evidence of another very successful year. The decision to double the subscription had been quite justified and the amount received this year was £69 against £33 in 1946. A resolution was passed to publish in bulk the amounts collected and contributed, instead of as individual donations. The Guild has grown very considerably since it was founded in 1932. The very real difficulties created by the war years, have made it imperative that the Executive Committee should be composed of ladies living in or within easy reach of London, and so could readily attend meetings.

A debate was held on the future organization of the Guild and the following resolution was proposed by Mrs. W. R. WOOLDRIDGE, seconded by Mrs. W. MITCHELL: "That members should acquaint the Executive Committee with any opinions and suggestions they might have regarding the rules and regulations for the future organization of the Guild, so that the Committee should be well equipped for its task of framing a constitution which would be acceptable at the next Annual General Meeting."

Appreciation was expressed at the very special efforts made by the Scottish Ladies, who collected £151 5s. during the year.

ELECTION OF OFFICERS

The following were elected for the ensuing year:—

President.—Mrs. W. C. Miller.

Vice-Presidents.—Mrs. Hancock, Mrs. Browne, Mrs. Camac, Mrs. Grant, Mrs. Hill-Owens, Mrs. Mitchell and Mrs. Thomas.

Hon. Secretary and Treasurer.—Mrs. R. E. Glover.

Hon. Auditor.—Professor G. H. Wooldridge.

Executive Committee.—Mesdames Barrett, Bell, Buxton, Gould, E. M. King, Hancock, and W. Mitchell.

DONATIONS

It was resolved that the following donations be made: £10 to the National Veterinary Benevolent and Mutual Defence Fund; £546 to the Victoria Veterinary Benevolent Fund: £226 to be devoted to the Christmas Fund and the balance, £320, to relief work during the current year.

The meeting closed with a unanimous vote of thanks to Mrs. Hancock (the retiring President), Professor G. H. Wooldridge, Hon. Auditor, and Mrs. R. E. Glover, Hon. Secretary and Treasurer.

The following amounts were collected during the year:—

	£	s.	d.
Mrs. Hill-Owens	5	11	6
Mrs. P. J. Simpson	12	1	2
Mrs. G. H. Wooldridge	9	3	0
Mrs. W. R. Wooldridge	10	13	6
Mrs. Jamieson	8	0	0
Mrs. Mitchell	23	13	0
Mrs. Sangster	9	5	0
Mrs. Stewart	14	13	6
Mrs. Thomson	9	3	0
Dance, Veterinary College, Dublin	14	12	6
Christmas Appeal, 1946	124	0	0
Dance arranged by Mrs. Sangster	50	0	0
Garden Fête held by Scottish Members ...	75	9	6
Royal (Dick) A.D.C.	25	15	6

NOTES AND NEWS

Diary of Events

Sept. 27th.—Meeting of the North of Scotland Division, N.V.M.A., at Inverness (Caledonian Hotel), 2 p.m.

Sept. 27th.—Extraordinary General Meeting of the Association of Veterinary Inspectors, at the Royal Veterinary College, Camden Town, London, N.W.1, 2 p.m.

Oct. 3rd.—Joint Meeting of the Mid-West and Western Counties Divisions, N.V.M.A., at Taunton (Municipal Buildings), 2.15 p.m.

Oct. 6th.—Meeting of the Farmers' Club, at the Royal Empire Society, W.C.2, 2.30 p.m. *Speaker*—The Rt. Hon. Tom Williams, M.P., Minister of Agriculture and Fisheries.

Oct. 8th.—Meeting of the Editorial Committee, N.V.M.A., 36, Gordon Square, W.C.1, 2.30 p.m.

Oct. 15th.—Meeting of the South-Eastern Division, N.V.M.A., at Maidstone (Royal Star Hotel), 2.30 p.m.

Oct. 16th.—Annual Meeting of the Central Veterinary Society, at the Royal Veterinary College, N.W.1, 2 p.m.

Oct. 22nd.—Special Meeting of Council, N.V.M.A., at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, 11.30 a.m.

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PERSONAL

Births.—BOLTON.—On September 15th, 1947, at Chester, to Ida (*née* Spencer), wife of J. F. Bolton, a son.

DOWNE.—On September 17th, 1947, at the Osborne Nursing Home, Thetford, to Nancy, wife of C. H. Downe, M.R.C.V.S., 93, Denmark Street, Diss, Norfolk, a daughter (Jacolyn Anne).

HERROD-TAYLOR.—On September 16th, 1947, at Scarborough, to Denise (*née* Herrod), wife of E. E. Herrod-Taylor, M.R.C.V.S., a daughter.

HILES.—On September 20th, 1947, to Phyllis, wife of H. J. Hiles, a son (Roger Bickerton).

WILSON.—On September 14th, 1947, to Enid, wife of Andrew Wilson, M.R.C.V.S., Northallerton, a daughter, Helen.

Marriages.—CRUFT—LATHAM ELAM.—At Westminster Abbey on September 15th, 1947, Adrian Francis, younger son of Mr. and Mrs. Eugene Cruft, 24, Abbotswood Road, Streatham, S.W.16, to Joyce Latham, only daughter of Mr. and Mrs. C. Wentworth Elam, Veterinary Establishment, 8, Roscommon Street, Liverpool, 5.

HEARN—EPPS.—On September 8th, 1947, at Ipswich, Suffolk, John Hearn to Elsie Margaret Epps, B.SC., M.R.C.V.S.

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Forthcoming Marriage.—LEWIS—WICKHAM.—The engagement is announced between Derek George Lewis, M.R.C.V.S., younger son of Mr. and Mrs. G. W. Lewis, Hastings, Sussex, and Miss Sheila Wickham, daughter of Mr. and Mrs. F. S. Wickham, Allison Avenue, Gillingham, Kent.

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Sir Frank Ware's Chairmanship of the Wool Advisory Committee.—In a joint announcement the Agricultural Departments of the United Kingdom state that a Wool Advisory Committee is being constituted by the Minister of Agriculture and Fisheries and the Secretaries of State for Scotland and the Home Department (acting as the Ministers responsible for agriculture in Scotland and Northern Ireland respectively) with the following terms of reference:—

(i) To advise the appointing Ministers on the arrangements for collecting and marketing home grown wool during the season 1947-48;

(ii) To recommend from time to time such modifications in these arrangements as the Committee may consider will be in the best interests of producers and consumers;

(iii) To consider such other matters connected with present and future plans for the marketing of home grown wool as may be referred to the Committee by the Ministers concerned.

The Committee has a membership of 12, of whom six represent wool growers in England, Scotland, Wales and Northern Ireland, and six represent wool trade interests, including processors, spinners, manufacturers, merchants and fellmongers. The Chairman of the Committee is Sir Frank Ware, C.I.E., F.R.C.V.S., who was formerly Animal Husbandry Commissioner to the Government of India.

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R.C.V.S. OBITUARY

REID, Harry Avery, O.B.E., F.R.C.V.S., F.R.S.E., D.V.H., Lt.-Col., late N.Z.V.C. Graduated London, July 14th, 1900; Fellowship December 2nd, 1905. Died September 14th, 1947; aged 70 years.

Lt.-Col. H. A. Reid, O.B.E., F.R.C.V.S., D.V.H., F.R.S.E.

We announce with the deepest regret the sudden death of Lt.-Col. Harry Avery Reid, formerly bacteriologist and pathologist to the New Zealand Department of Agriculture, and latterly veterinary officer in the office of the High Commissioner, New Zealand, which took place on Sunday last. His passing will be widely mourned not only by his colleagues and other close associates in this country, but in the Dominion to which he rendered such distinguished service.

Colonel Reid had a very wide knowledge of veterinary activities and all types of scientific research work in connection with diseases of animals. He was a much travelled man and was always most willing to pass on his knowledge. It was freely placed at the disposal of the National Veterinary Medical Association and his membership of the Overseas and Appointments Committees was of great value to those bodies. For many years Colonel Reid attended our Congress as the representative of the High Commissioner.

Born in London, Harry Avery Reid was educated at the Anglo-French High School and Oakfield College. Graduating from the Royal Veterinary College in 1900, he gained postgraduate experience at the Pasteur Institute, Paris, and at the University of Liverpool (D.V.H., 1906). He was elected F.R.S.E. in 1912.

Colonel Reid first went to New Zealand in the Government service in 1901, but remained with it only for a year. Two years later he entered the Egyptian Government service, in the Public Health Department, and became senior veterinarian in charge of the Serum Institute in Cairo. He re-entered the New Zealand Government service in 1907 and three years later filled the post of bacteriologist and pathologist in the Department of Agriculture.

During the 1914-18 war he was Assistant Director of Veterinary Services in the New Zealand Division, attaining the rank of Lieutenant-Colonel. Colonel Reid was twice mentioned in despatches and awarded the O.B.E. He maintained his connection with the New Zealand Military Forces after the war as Assistant Director of Veterinary Services to the Wellington Military District.

He returned to London to take up the position of Veterinary

Officer in the High Commissioner's Office as from December 1st, 1936. He was a member of the committee of the International Office of Epizootics, Paris, from its inception to the outbreak of the second world war; also of the sub-committee of the League of Nations on International Meat Inspection, meeting at Geneva. His contributions to veterinary literature include "The Diseases of Farm Animals in New Zealand," published in 1923, and a later work, "The Use of Iodine and its Compounds in Veterinary Practice."

Colonel Reid married Frieda, daughter of Mr. J. Martin, J.P., of Martinborough, New Zealand, their son being Flying-Officer J. V. Reid, R.A.F. (New Zealand). Our deepest sympathies are extended to those bereaved.

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THE VETERINARY EDUCATIONAL TRUST

Professor L. Seekles, Utrecht, has agreed to give the Fison lectures of the Veterinary Educational Trust for 1948. They will commence in May and the Professor will deal with his recent work on nutrition and the diseases of farm livestock.

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The Secretary of the National Greyhound Racing Society has sent a cheque for £10,000 to the Veterinary Educational Trust, while the Bloodstock Breeders' Association of Australia, in forwarding £50 to the Trust to aid in the maintenance of the Newmarket Research Station, states: "We in Australia are taking a great interest in what is being done in England."

Dr. Guillermo V. Garbers, the Buenos Aires veterinary surgeon, who came to this country recently to study the latest research work in the diseases of thoroughbred horses, has written to the Trust thanking its officers for the facilities offered to him to pursue his studies. "They opened many doors for me," he says, "enabling me to take the fullest possible advantage of all available sources of reference."

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CARCASE EXAMINATION FOR *CYSTICERCUS BOVIS* INFECTION

Positive Findings at Belfast Abattoir

Mr. A. McLean, Belfast City Veterinarian and Manager of Abattoir, writes: "Quite recently I was discussing the question of *Cysticercus bovis* infection with a colleague, and as I was unable to find any record of this condition occurring in Great Britain I decided to examine some 2,000 carcases at the Belfast Abattoir definitely to settle the question as to whether or not the condition occurs in Northern Ireland.

"You can imagine my surprise when I found on examination that of the 2,000 bovine carcases examined, six were positive. In each case a single cyst was found in the masseter muscle. In every instance the cyst was found in the left masseter muscle about the centre. The cyst was about the size of a small pea, but somewhat elongated and of a reddish white colour. It was easily enucleated, leaving a depression.

"I am indebted to Mr. Gibson, of the Ministry of Agriculture and Fisheries, Weybridge, for confirming the diagnosis.

"Needless to say we are now examining every bovine carcase for this parasite, and perhaps at a later date I will be able to give you a more informative contribution."

[In this connection it is interesting to note that although *Cysticercus bovis* infection does not appear to be of common occurrence, nevertheless it is occasionally met with in Great Britain and the English Ministry of Health Memo. 62/Foods in its "General Instructions to Inspectors" directs that, in the examination of the head the cheek muscles shall be examined by lineal incision parallel to the lower jaw.—*Editor.*]

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreaks.

Sheep Scab:

Derbyshire.—Garner House, Shatton, Bamford, Sheffield; Barber Booth, Edale, Sheffield; Ollerbrook, Edale, Sheffield; Twitchill Farm, Hope, Sheffield; Shaw Wood, Edale, Sheffield (September 9th); Gillott Hey and Blagden View, Ashopton, Sheffield; Cotefield Farm and Grindslow House, Edale, Sheffield (September 16th).

MINISTRY OF AGRICULTURE NEWS SERVICE

Breeding Arable Sheep.—For many years British breeds of arable sheep have led the world in quality of carcase and early maturity. Whenever improvement in any breed has been required for mutton production, one or other of the English down breeds has been used.

Presumably the economic points of importance in sheep are mutton quality, early maturity, fecundity, hardiness, plenty of milk for the young lamb and satisfactory wool. Modern scientific research on breeding problems indicates that it is difficult to combine all this in one animal. You can produce sheep that will twin well and give plenty of milk, and have a good carcase too; but it is doubtful whether the superlative point of meat production can be combined with high milk yield.

Early maturity and high quality carcase were probably first attained by crossing with a Southdown; but for nearly a century the other Down breeds have been bred pure and improvements have been effected by selection. Improvement by selection of meat characters is only successful when the whole flock is fed on a high plane of nutrition. Before the war, this was the case with the Down sheep. It was the universal practice to feed considerable quantities of purchased high-protein foods. Reduction of arable flocks, owing to economic conditions and the restricted rations of the war years, must have impeded the efforts of the remaining flock masters to improve mutton qualities by selection; but it is probably true that the Down breeds have already reached such a high standard in meat characters that little further progress can be expected along these lines.

Future policy should be directed towards improving the other economic points, specially higher twinning and higher milk production; Down sheep are specially valuable for crossing on the grass flocks. Most of the grass flocks are good milk producers and the Downs are needed to give meat qualities to the first cross.

Twinning and milk production in pure breeds can only be encouraged by careful selection; the present fashion of using ram lambs in arable flocks is probably unsound from this point of view. The ram breeder has to sell a big ram lamb if he is to get a good price at the annual sales. These big lambs are almost always singles, and it is likely that for many years the best Down flocks have been using singles almost exclusively. Possibly part of the success of the Dorset Horn breed in fecundity and milk production is due to the widespread practice amongst producers for many years of exchanging ram lambs rather than buying at fairs. The professional ram breeder is almost unknown in the Dorset Horn breed. It is quite common for two flock masters to agree that they will each save the other, say, ten ram lambs, and the exchange is made without any money passing. So there is no reason for saving only single lambs and many more twin lambs are used for breeding purposes.

. . . . .

Films.—"Breeding for Milk" is the title of a new film prepared by the Ministry to stress the importance of grading-up dairy herds with special emphasis on the proven sire. A demonstration of the points to look for in dairy cattle is a feature that will be of special interest to young farmers. Copies of the film will be available in the autumn.

Mobile film units of the Central Office of Information are available for film showings, full particulars obtainable from the Regional Film Officer. Or where a (16 mm.) sound projector is available and the film *only* is required, early application should be made to the Central Film Library, Imperial Institute, South Kensington, London, S.W.7.

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BENADRYL

Discussing the use of anti-histamines in small-animal practice, Dr. I. W. Taylor (*N. Amer. Vet.* **28.** 364) states, in regard to Benadryl: "This drug is a benzhydryl alkamine ether, produced by Parke-Davis & Company. It is a white crystalline solid, soluble in water and alcohol.

"It has been used in hay fever, vasomotor rhinitis, urticaria and angioneurotic oedema.

"Human patients report the effects as a warm feeling enveloping the whole body, with immediate relief from the distressing itching.

"It is particularly effective in allergy cases where the underlying problem is oedema produced by the release of histamine or H-like substance.

"It diminishes the depressor action of histamine and acetylcholine, augments the pressor action of adrenalin, decreases duodenal motility, but has no effect on uterine motility.

"The side reactions of benadryl have been drowsiness, lassitude, and dizziness. This is not detrimental in veterinary practice. In fact, since the sedative effect contributes to the satisfactory control of dermatitis, animal patients will be less likely to molest themselves."

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

Correspondents should write as briefly as possible and letters should not exceed 350 words.

PREGNANCY DIAGNOSIS BY PALPATION OF FOETAL MEMBRANES

Sir,—I wonder why Mr. W. F. Davison, F.R.C.V.S., should have chosen to write to *The Veterinary Record* concerning certain of my remarks on the above subject about which he now appears to be under a misapprehension? If he had mentioned the matter to me during the conversation which he had with me after the meeting, it would have saved both of us time and trouble.

The views which I expressed to the meeting in Dublin on this subject are similar to those contained in a letter which I wrote to *The Veterinary Record* on September 12th, 1942, in reply to a communication from two of the well-known veterinarians mentioned by Mr. Davison. The relevant passage is as follows:—

> "Rowson and Spriggs very boldly assert that in coming to a decision as to whether pregnancy or pyometra exists 'the only distinguishing feature by rectal examination is to pick up a fold of the uterus and allow it to slip through the finger and thumb, when the foetal membrane will be felt slipping away before the uterine wall is released.' The importance of this statement is its association with the time factor, for the authors are discussing an enlargement comparable to a three to three and a half months' pregnancy. At this time, *generally speaking* (please note the qualification), the gravid uterus has reached its maximum tenseness and it would be quite impossible for the vast majority of practitioners, myself included, to pick up a fold of the uterus at all. In the diagnosis of pregnancy there are a number of factors to be considered, some more reliable than others and some being of greater value to one person than to another, but whilst admitting room for a wide difference of opinion, I say without hesitation that what Rowson and Spriggs describe as 'the only distinguishing feature' is the most unreliable of all."

In conclusion, may I say that though I am no less experienced now than I was in 1942 I seldom employ the palpation of foetal membranes even as an aid to the diagnosis of pregnancy, and I certainly do not consider it to be either as safe or as reliable a procedure as some others apparently do.

Yours faithfully,

28, Lichfield Street, H. W. STEELE-BODGER.
Tamworth, Staffordshire.
September 11th, 1947.

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PHENANTHRIDINIUM COMPOUNDS AND BOVINE TRYPANOSOMIASIS

Sir,—We wish to remove a persistent misapprehension which has arisen among those engaged in the treatment of bovine trypanosomiasis with phenanthridinium compounds.

From time to time, field workers using Dimidium bromide ("1553") have sought to explain the variations of toxic phenomena observed in different parts of Africa and in different herds of cattle in varying states of nutrition, by the possibility of variation in toxicity of the samples of drug supplied to them. No evidence in support of this view may be adduced from a critical examination of the published reports, but the impression persists (Fiennes, 1947). In view of the fact that "1553" is a crystalline compound of fixed chemical constitution, such variation appears unlikely, but when the possibility was first suggested by Professor C. H. Browning, F.R.S., in December, 1945, we re-examined the acute toxicity and trypanocidal activity of all batches of the drug available to us, including the sample used by Professor Browning in his original experiments. The results of this work were made available to the Committee for Colonial Agriculture, Animal Health and Forestry Research, of the Colonial Office in February, 1946, but in view of the recently published statements, we wish to give them wider publicity in these columns. The figures in Table I show that all of the samples of "1553" are equally toxic to mice, within the calculated limits of error, whether given by the intravenous, intraperitoneal or intramuscular route. Also, when assayed for activity against *Trypanosoma congolense* infections in mice, no significant difference of activity could be detected between the samples. In addition, comparisons were made between the activities of (*a*) a freshly prepared aqueous solution, (*b*) a solution stored for 24 hours at 22° C., (*c*) a solution autoclaved at a pressure of 15 lb. per square inch for ten minutes, and (*d*) a suspension in almond oil. Again, no significant difference could be detected. We are satisfied, therefore, that the toxic and therapeutic properties of different batches of "1553" do not vary, and that the drug is sufficiently stable to remove any possibility of differences caused by the method of preparation of solutions for injection.

TABLE I

Sample	Intravenous		Intraperitoneal		Intramuscular	
	L.D.50 mg./kg.	% Limits. P. = 0·99)	L.D.50 mg./kg.	% Limits. (P. = 0·99)	L.D.50 mg./kg.	% Limits. (P. = 0·99)
I	14	88–115	120	64–153	73	92–108
II and III	13	88–122	insufficient		insufficient	
IV	12	77–130	110	83–122	82	85–125
V	9·8	73–138	110	94–108	83	83–122
VI	11	88–114	130	88–115	insufficient	
VII	9·8	83–122	95	63–157	71	84–118
VIII	11	95–105	140	90–112	91	75–130
"A"	11	83–122	110	88–115	80	82–120
"B"	9·8	83–122	110	88–115	80	82–120
A.N.5339	8·6	83–122	88	83–122	95	80–126
1553 (M & B)			90	60–162	70	92–110
897	6·8		82	83–122	64	83–118

Key: Samples I-VIII were prepared at the Wellcome Chemical Works, Dartford, and sent to Africa for field trials in the summer of 1945, batches of II, III and V going to Uganda, and of II and IV to the Gold Coast Colony and Bechuanaland. Sample A.N. 5339 was from a large batch made subsequently at Dartford. Samples "A" and "B" and "897" were prepared at the Chemical Research Laboratory, Teddington, Middlesex, and the sample "A" is identical with that used by Professor C. H. Browning in his original experiments.

We wish also to comment upon the relative properties of phenanthridinium "897" and "1553." Further reference to Table I will show that "897" is more toxic than "1553" by all methods of administration. Acute toxicity tests of this kind give no explanation of the interesting delayed toxic effects associated with photosensitization which have been observed in cattle treated with large doses of "1553," but which have not so far been reported with "897."

In the course of extensive pharmacological investigations upon laboratory animals and cattle, we have been unable to reproduce delayed toxic effects with either drug, but our experiments have revealed a striking similarity between the properties of "1553" and "897." The rate of urinary excretion and the distribution of the drugs in skin, liver, lung, spleen, kidney and other tissues is essentially the same. The damage caused to the liver by repeated administration of large doses for long periods is similar in character and extent. The only significant difference observed is in the concentration of drug which can be detected in the blood stream after subcutaneous injection in the bovine; both persist for some 3 hours, but the concentration of "1553" is twice as great as for "897."

The above evidence suggests that the drugs would be likely to produce similar pathological changes in infected cattle when *administered at equivalent therapeutic dose levels.* It will be recalled that there is extensive evidence from laboratory experiments, that "1553" is about three times as active as "897" against the mouse infection of *T. congolense,* and Bell and others have shown that the relative potency is of the same order in infected cattle. A valid comparison of the toxic effects of the two drugs would require the administration of doses of equivalent therapeutic value, that is to say, a dose of 1 mg./kg. of "1553" should be compared with a dose of 3 mg./kg. of "897." We would enter the plea that any parallel investigation that is taking place, or is proposed to take place, in Africa should include a comparison at therapeutically equivalent doses, tested at the same time and place in the same herd of cattle.

In the meantime it is a pity that the more widespread use of these potent trypanocides should be delayed through controversy.

Yours faithfully,

G. BROWNLEE.
L. G. GOODWIN.
L. P. WALLS.

The Wellcome Foundation,
183, Euston Road, London, N.W.1.

REFERENCE

FIENNES, R. N. T. W. (1947.) *Vet. Rec.* 59. 330.